

EXHIBIT B



2019 Target-Date Fund Landscape

Simplifying the Complex

Morningstar Manager Research
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Executive Summary

Target-date funds are designed to be a simple, all-in-one solution and relatively easy for investors to use. But these simplifying features can make target-date funds tricky to evaluate. Judging from investor demand alone, one would think that the merits of a target-date fund series turn entirely on its fees, as the trend of low-cost funds and collective investment trusts attracting the lion's share of asset flows to target-date funds continued in 2018. But fees don't necessarily tell the whole story, making it important to assess other aspects. This report explores key trends in investment process, people, providers, and performance which, taken together with price, should comprise any comprehensive analysis of target-date funds. In addition, this year's report previews a few of the new data points and exhibits that will become fixtures of the enhanced Morningstar Target-Date Fund Series Reports set to launch in June 2019.

Key Takeaways

- ▶ Assets in target-date strategies totaled more than a whopping \$1.7 trillion at the end of 2018, with \$1.1 trillion in mutual funds and approximately \$660 billion in collective investment trusts.
- ▶ While assets in target-date CITs rose by approximately \$30 billion in 2018, assets in target-date mutual funds declined to \$1.09 trillion from \$1.11 trillion—the first dip since 2008. A healthy \$55 billion in estimated net flows to the funds wasn't enough to offset the funds' negative returns.
- ▶ Price drove the popularity of a target-date fund in 2018, with an estimated \$57 billion in assets flowing to funds with expense ratios less than or equal to 0.20%. Meanwhile, funds with expense ratios higher than 0.60% saw approximately \$37 billion leave.
- ▶ The demand for low-fee options is reshaping the target-date fund landscape, with multiple providers launching less expensive alternatives to their legacy offering or making their strategy available in lower-cost vehicles like CITs. Eight of the 10 largest target-date providers by total target-date assets offered their strategy through both mutual fund and CIT vehicles at year-end 2018.
- ▶ Target-date funds' average asset-weighted expense ratio continued its persistent year-over-year decline in 2018, falling to a historic low of 0.62% from 0.66% in 2017. Investors moving assets to lower-cost share classes drove 2018's decline.

- ▶ Target-date funds that hold predominantly index funds and target-date CITs have risen in popularity amid the heightened attention to costs. Nearly all the \$55 billion estimated net flows to target-date mutual funds in 2018 went to series that held more than 80% of assets in index funds, and target-date CITs' asset growth in 2018 when target-date mutual funds' assets declined reflects brisker demand for the CITs.
- ▶ Vanguard is dominating the target-date market. The firm's roughly \$650 billion in total target-date assets at year-end 2018 accounted for nearly 40% of market share, dwarfing the 15% of market share of its next-closest competitor.
- ▶ Investors in target-date funds with low fees have generally been rewarded with peer-beating results over the past five years. Over the one-, three-, and five-year periods through 2018, representative share classes of funds with expense ratios less than or equal to 0.20% generally posted the best average Morningstar Category rank.
- ▶ The returns of a target-date provider's newer, lower-cost series don't always outpace those of the legacy, higher-priced offering. Of the 10 target-date series that replicate a legacy offering but with lower fees, the since-inception returns for three failed to keep pace.
- ▶ "Passive" target-date funds do not exist. Comparing sub-asset-class glide paths may reveal significant differences in approaches—even between series that invest only in index funds—not apparent by examining strategic equity glide paths.
- ▶ Only 16 of the roughly 140 target-date fund managers invested more than \$1 million in their series as of year-end 2018. Of that 16, four of the six managers who run multiple series invest more in a higher-cost, legacy offering that relies predominantly on actively managed underlying holdings.
- ▶ Nearly half of target-date fund series underwent a change to their manager roster in 2018. Thirty of the 63 target-date fund series gained or lost a manager during the year.

Assets, Flows, and the Competitive Landscape

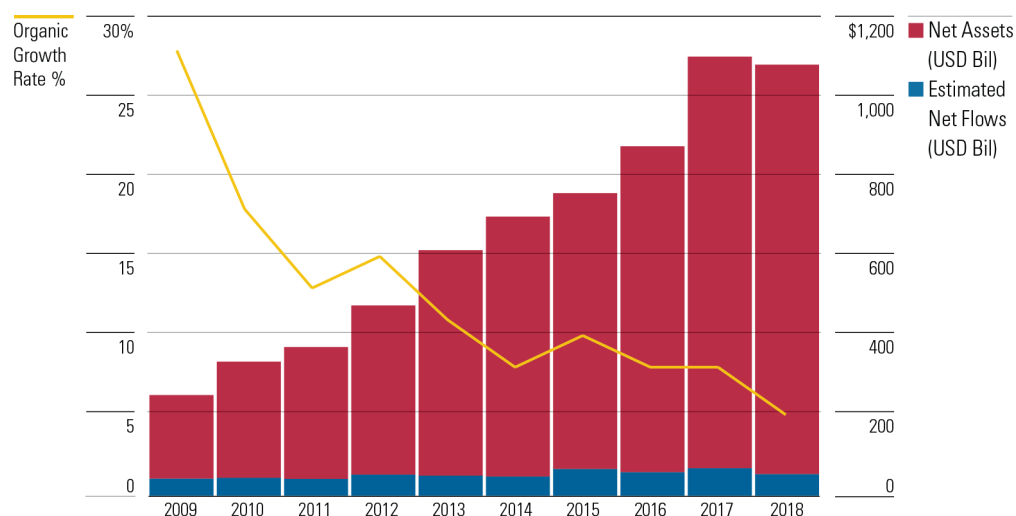
Target-date strategies play a central role in many American's retirement success by often serving as the default investment option in their defined-contribution retirement plans. As such, it is important to assess how investor demand for target-date strategies is evolving, as well as how target-date providers have responded to the trends.

Market Losses Interrupt Asset Growth for Target-Date Mutual Funds

Assets in target-date mutual funds receded slightly in 2018, marking the first calendar-year decline since 2008. After eclipsing \$1 trillion in 2017, assets in target-date mutual funds totaled roughly \$1.09 trillion at the end of 2018, down from \$1.11 trillion at year-end 2017. Still, target-date funds' growth over the past 10 years has been remarkable, as assets have more than quintupled since 2008, when they stood at \$158 billion, with double-digit annual organic growth being the norm until relatively recently, as shown in Exhibit 1.

While assets in target-date funds declined in 2018, they remained a popular option for investors. In 2018, target-date mutual funds saw \$55 billion in estimated net flows, down slightly from \$70 billion in 2017, which was an all-time high. Yet, 2018 marked the 12th-consecutive year these funds have hauled in at least \$40 billion in inflows.

Exhibit 1 Net Assets, Estimated Net Flows, and Organic Growth Rates of U.S. Target-Date Mutual Funds, 2009-18



Source: Morningstar, Inc. Data as of 12/31/18.

Target-date funds fell 6.22%, on average, in 2018, pushing assets lower. Funds in the target-date Morningstar Categories with the highest equity exposure felt the most pain. For instance, the target-date 2060+ category average fell 8.52% versus only 3.16% for the average target-date Retirement fund. Meaningful exposure to non-U.S. stocks, which declined significantly in 2018, was a drag on returns, particularly for funds with heavier equity stakes. Coupled with U.S. bonds' generally flat returns, every target-date fund posted a loss in 2018.

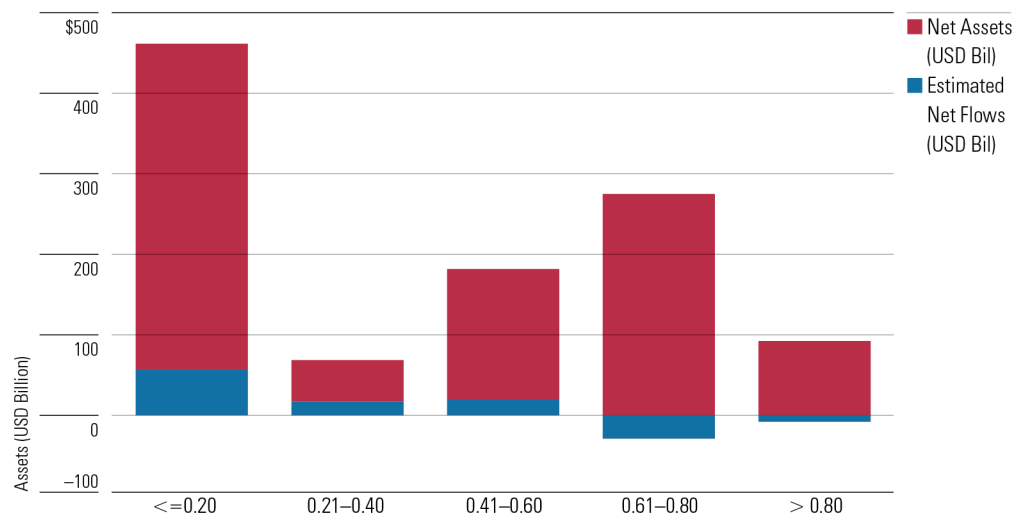
Exhibit 2 Calendar-Year Returns for Target-Date Fund Morningstar Categories, 2008-18

Morningstar Category	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
US Fund Target-Date Retirement	-3.16	8.81	5.10	-1.50	4.36	7.36	9.01	1.60	8.94	18.36	-18.06
US Fund Target-Date 2000-2010	-3.25	10.15	5.86	-1.18	4.10	8.30	9.61	0.91	10.68	22.42	-22.46
US Fund Target-Date 2015	-3.86	11.29	6.12	-1.34	4.48	9.65	10.65	-0.27	11.50	23.55	-27.76
US Fund Target-Date 2020	-4.49	12.46	6.23	-1.57	4.72	11.57	11.68	-0.22	12.27	24.25	-29.46
US Fund Target-Date 2025	-5.34	14.67	6.73	-1.59	5.07	15.30	13.03	-2.06	13.29	28.32	-34.15
US Fund Target-Date 2030	-6.25	16.57	7.33	-1.79	5.04	16.65	13.59	-2.26	13.47	28.87	-36.04
US Fund Target-Date 2035	-7.04	18.43	7.57	-1.76	5.24	20.00	14.64	-3.51	14.28	30.06	-37.04
US Fund Target-Date 2040	-7.74	19.52	7.95	-1.99	5.25	19.97	14.64	-3.49	14.37	30.90	-37.94
US Fund Target-Date 2045	-8.14	20.51	7.93	-1.87	5.35	22.00	15.31	-4.10	14.60	30.88	-38.11
US Fund Target-Date 2050	-8.41	20.67	8.22	-2.01	5.42	21.02	15.07	-3.82	14.53	32.02	-38.67
US Fund Target-Date 2055	-8.44	21.08	8.00	-1.71	5.49	23.14	15.52	-4.13	14.45	32.20	-38.86
US Fund Target-Date 2060+	-8.52	21.27	7.81	-1.17	5.53	24.35	—	—	—	—	—
Average	-6.22	16.28	7.07	-1.63	5.00	16.61	12.98	-1.94	12.94	27.44	-32.60
Market Indexes											
S&P 500	-4.38	21.83	11.96	1.38	13.69	32.39	16.00	2.11	15.06	26.46	-37.00
MSCI ACWI Ex USA NR	-14.20	27.19	4.50	-5.66	-3.87	15.29	16.83	-13.71	11.15	41.45	-45.53
BBgBarc US Agg Bond	0.01	3.54	2.65	0.55	5.97	-2.02	4.21	7.84	6.54	5.93	5.24
ICE BofAML US 3M Trsy Bill	1.87	0.86	0.33	0.05	0.03	0.07	0.11	0.10	0.13	0.21	2.06

Source: Morningstar, Inc. Data as of 12/31/18.

Price Driving Popularity

Low-cost target-date funds took more market share from pricey funds in 2018. Exhibit 3 illustrates 2018's estimated net flows by current expense ratios. Target-date funds with expense ratios less than or equal to 0.20% led the way, gathering an estimated \$57 billion in assets in 2018. Funds with expense ratios between 0.21% and 0.40% as well as those with expense ratios between 0.41% and 0.60% also saw positive flows in 2018, \$17 billion and \$19 billion, respectively. Conversely, funds with expense ratios greater than 0.60% experienced outflows in 2018. While funds with expense ratios between 0.61% and 0.80% still had approximately \$277 billion in total assets at year-end, second behind the lowest-cost cohort, those funds saw an estimated \$29 billion leave in 2018.

Exhibit 3 2018 Net Assets and Estimated Net Flows of Target-Date Mutual Funds by Expense Ratio

Source: Morningstar, Inc. Data as of 12/31/18.

Adapting to Meet Demand

Multiple target-date providers have responded to the low-cost demand by launching lower-cost versions of their existing target-date series. This trend began in 2008 when Voya launched a version of its original strategy that invested only in index funds, and many other firms followed suit in subsequent years.

Exhibit 4 shows that by year-end 2018 roughly 40 providers offered 63 different series of target-date mutual funds, reflecting the growing trend for providers to offer multiple target-date series to investors.

The year 2018 was quiet for fund launches, continuing a trend of no more than five new series launch in any calendar year since 2009, as shown in Exhibit 4. Only two new target-date series joined the fray in 2018, the fewest since 2013, and both came from providers—Fidelity and MassMutual—that already offered a target-date series.

Two target-date providers terminated their target-date series in 2018. Virtus liquidated its series—a repackaging of the Dimensional Target Date Retirement Income series—in October 2018, and BlackRock merged the State Farm LifePath series, which had a Morningstar Analyst Rating of Negative, into its LifePath Index series the following month. Already in 2019, PIMCO liquidated its RealPath series, though RealPath Blend series remains, and BMO and MainStay each announced plans to shutter their only series.

Exhibit 4 Number of Target-Date Series, Launches and Terminations 2002-18

Source: Morningstar, Inc. Data as of 12/31/18.

No Contest in the Sibling Rivalry

When providers offer multiple target-date fund series, investors tend to choose the cheapest one. Exhibit 5 shows the 14 firms with multiple target-date fund series, each series' inception date, year-end 2018 assets, estimated net flows in 2018, and asset-weighted average expense ratio. Nine of the 14 firms created a lower-cost alternative to an existing series while sticking to the same equity glide path. In each of these cases, the cheaper series saw higher net flows than the legacy series in 2018, and in seven instances the lowest-cost series' flows were positive while the legacy series saw outflows.

The primary method to create a lower-cost series has been to take an existing series' glide-path approach and swap the underlying active funds with index funds. Six firms—Fidelity, TIAA-CREF, BlackRock, John Hancock, Voya, and Schwab—have followed this blueprint, including "Index" in the name of the new series to distinguish it from the legacy one. For instance, Fidelity launched the Freedom Index series, which saw \$4.9 billion in estimated net inflows in 2018, in 2009 with a heavy reliance on index funds, whereas the legacy Fidelity Freedom series, which experienced \$5.4 billion in outflows in 2018, has long tapped the firm's active funds.

Some firms, such as Fidelity, JPMorgan, Principal, and PIMCO, have created lower-cost offerings while retaining some active funds as underlying holdings. These "blend" or "hybrid" strategies have also come into favor. For example, JPMorgan SmartRetirement Blend saw \$2.7 billion in estimated net inflows in 2018 compared with an estimated \$1.5 billion net outflows from JPMorgan SmartRetirement.

Exhibit 5 Fund Firms With Multiple Target-Date Fund Series

Firm and Target-Date Series Name	Inception Date	Assets (USD Million)	% of Firm's TDF Assets	2018 Estimated Flows (USD Million)	Asset-Weighted Avg. Expense Ratio (%)
Fidelity		210,736.6		-1,168.5	
Fidelity Freedom	10/17/96	167,162.7	79.3	-5,401.6	0.62
Fidelity Advisor Freedom	7/24/03	16,318.2	7.7	-730.8	0.90
Fidelity Managed Retirement	8/30/07	42.8	0.0	-12.4	0.60
Fidelity Simplicity RMD	8/30/07	83.4	0.0	23.7	0.56
Fidelity Freedom Index	10/2/09	27,091.2	12.9	4,914.4	0.11
Fidelity Flex Freedom	6/8/17	1.3	0.0	0.0	0.00
Fidelity Freedom Blend	8/31/18	36.9	0.0	38.1	0.44
T. Rowe Price		142,336.1		-13,457.1	
T. Rowe Price Retirement	9/30/02	140,552.5	98.7	-13,810.4	0.69
T. Rowe Price Target Retire	8/20/13	1,752.1	1.2	340.7	0.66
T. Rowe Price Retirement Income	5/25/17	31.4	0.0	12.6	0.71
JPMorgan		50,278.6		1,197.7	
JPMorgan SmartRetirement	5/15/06	44,453.9	88.4	-1,553.0	0.66
JPMorgan SmartRetirement Blend	7/2/12	5,824.8	11.6	2,750.7	0.33
TIAA-CREF		45,128.1		4,952.4	
TIAA-CREF Lifecycle	10/15/04	29,351.0	65.0	586.5	0.50
TIAA-CREF Lifecycle Index	9/30/09	15,777.1	35.0	4,365.8	0.15
BlackRock		28,068.0		3,919.2	
BlackRock LifePath Dynamic	3/1/94	1,080.8	3.9	-261.4	0.86
BlackRock LifePath Smart Beta	4/20/07	136.5	0.5	-20.3	0.64
BlackRock LifePath Index	5/31/11	26,850.7	95.7	4,200.9	0.19
Principal		20,829.8		-3,211.8	
Principal LifeTime	3/1/01	19,957.2	95.8	-3,485.2	0.80
Principal Lifetime Hybrid	9/30/14	872.6	4.2	273.3	0.46
John Hancock		14,944.8		-977.0	
John Hancock Multimanager Lifetime	10/30/06	6,605.1	44.2	-487.8	0.68
John Hancock Multi-Index Preservation	4/29/10	7,042.9	47.1	-593.3	0.41
John Hancock Multi-Index Lifetime	11/7/13	1,296.8	8.7	104.0	0.41
Voya		6,827.6		359.7	
Voya Solution	4/29/05	2,748.4	40.3	-289.0	1.05
Voya Index Solution	3/10/08	3,993.1	58.5	595.5	0.39
Voya Target Retirement	12/20/12	86.1	1.3	53.2	0.51
Great-West		6,086.4		-880.6	
Great-West Lifetime Conservative	5/1/09	458.3	7.5	-187.9	0.93
Great-West Lifetime	5/1/09	5,247.8	86.2	-501.4	0.97
Great-West SecureFoundation Lifetime	11/13/09	380.3	6.2	-191.3	0.66
MassMutual		5,870.5		3,852.5	
MassMutual RetireSMART by JPM	12/31/03	2,102.8	35.8	-226.2	0.95
MassMutual Select TRP Retirement	2/16/18	3,767.6	64.2	4,078.7	0.74
Schwab		4,572.9		484.5	
Schwab Target	7/1/05	3,718.6	81.3	-46.9	0.57
Schwab Target Index	8/25/16	854.3	18.7	531.4	0.08
Wells Fargo		2,962.5		-2,312.7	
Wells Fargo Target	3/1/94	2,907.1	98.1	-2,307.0	0.41
Wells Fargo Dynamic Target	11/30/15	55.3	1.9	-5.7	0.29

Source: Morningstar, Inc. Data as of 12/31/18.

Exhibit 5 Fund Firms With Multiple Target-Date Fund Series

Firm and Target-Date Series Name	Inception Date	Assets (USD Million)	% of Firm's TDF Assets	2018 Estimated Flows (USD Million)	Asset-Weighted Avg. Expense Ratio (%)
PIMCO		517.4	—	83.1	
PIMCO RealPath	3/31/08	107.2	20.7	-60.1	0.86
PIMCO RealPath Blend	12/31/14	410.2	79.3	143.2	0.44
Invesco		194.9	—	-52.0	
Invesco Balanced-Risk Retirement	1/31/07	187.1	96.0	-52.0	1.19
Invesco Peak Retirement	12/29/17	7.8	4.0	—	0.73

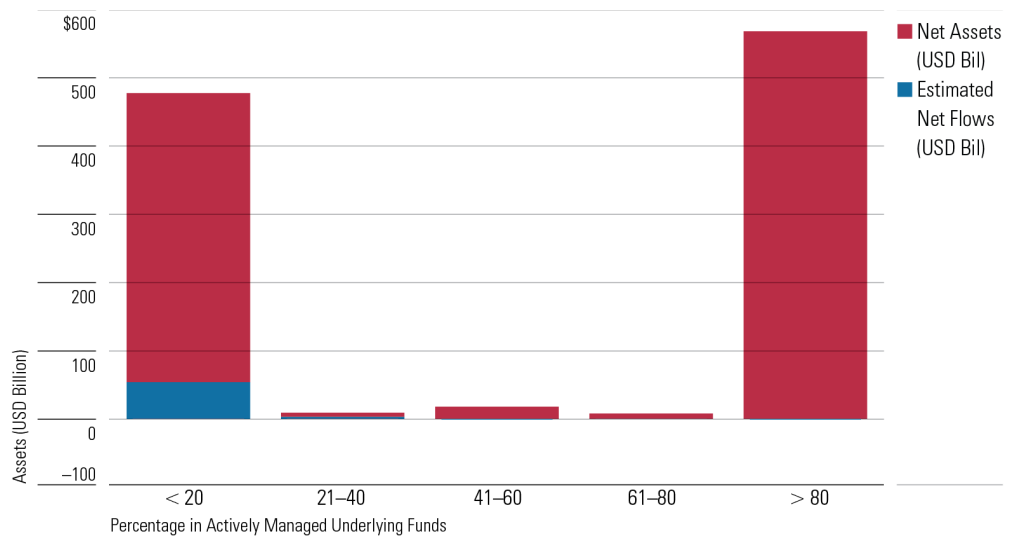
Source: Morningstar, Inc. Data as of 12/31/18.

Lower Costs Via Index Funds

Growth in target-date funds that hold mainly index funds has exploded with the demand for low-cost options. Exhibit 6 shows 2018 asset and flow data for target-date funds grouped by the amount they held in actively managed underlying funds. Virtually all the \$55 billion in overall estimated 2018 net inflows to target-date mutual funds went to series that held more than 80% of assets in index funds. (These series are commonly referred to as "passive," but no series is truly passively managed, as every target-date manager makes active decisions in building a glide path, selecting asset classes, and choosing holdings.) By contrast, series that held less than 60% of assets in index funds saw little demand in 2018.

Target-date series that held mostly actively managed funds still had more assets than series that invest predominantly in index funds at year-end 2018, but the latter is catching up quickly. Exhibit 6 shows series with more than 80% of assets in actively managed underlying funds held approximately \$570 billion in assets at year-end 2018, whereas ones with less than 20% in actively managed underlying funds had roughly \$480 billion. If recent trends hold, series that invest predominantly in index funds could overtake series that hold mainly active funds within a couple of years.

Exhibit 6 2018 Assets and Estimated Net Flows of Target-Date Mutual Funds by Percentage in Active Underlying Funds



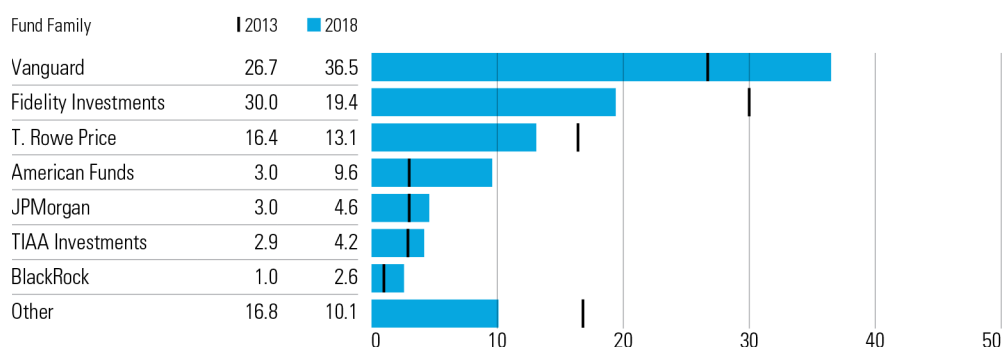
Source: Morningstar, Inc. Data as of 12/31/18.

Vanguard's Dominance

Amid the sweeping demand for low-cost options, Vanguard is dominating the target-date fund market. As seen in Exhibit 7, Vanguard has captured 10 percentage points of the target-date fund market since 2013, taking the top spot from Fidelity in 2014 and expanding its market share to approximately 37% of assets in 2018. (Vanguard offers a single target-date series that invests mainly in index funds.) Fidelity and T. Rowe Price, which rely mainly on active funds in their legacy approaches, have lost market share over that same period.

Not all series that hold primarily active funds have struggled to attract assets, though. For example, American Funds and JPMorgan both increased market share over the past five years and neither offers a series that invests only in index funds. However, as previously mentioned, the JPMorgan SmartRetirement Blend series, which blends actively managed funds with index funds, received more assets from investors than the firm's legacy active-heavy series in 2018.

A small number of providers continue to dominate the target-date fund market, while numerous other firms compete for scraps. Seven providers had 90% of the target-date assets at year-end 2018, leaving more than 30 other firms to compete for the remaining 10% of market share. Target-date funds' market share has become more concentrated in recent years, as those same seven providers had 84% of the market in 2013. Seventeen providers had less than \$1 billion in their target-date mutual funds at the end of 2018, and several of them have offered target-date funds for more than a decade.

Exhibit 7 Firm Market Share of Target-Date Mutual Funds: 2018 versus 2013

Source: Morningstar, Inc. Data as of 12/31/18.

Vanguard has grown its market share rapidly by capturing the lion's share of flows to target-date funds in recent years. As shown in Exhibit 8, Vanguard saw \$40.8 billion in estimated net flows in 2018, bringing its total assets in target-date mutual funds to \$396.2 billion. To put Vanguard's growth into context, its 2018 estimated net flows exceeded the seventh-largest provider's total target-date mutual fund assets. American Funds' \$21.2 billion estimated net flows in 2018 came in second, but no other provider saw more than \$5 billion in flows in 2018, and only six saw more than \$1 billion: TIAA Investments (\$5.0 billion), BlackRock (\$3.9 billion), MassMutual (\$3.9 billion), State Street Global Advisors (\$1.6 billion), KP Funds (\$1.4 billion), and JPMorgan (\$1.2 billion).

Meanwhile, many providers have struggled to generate inflows to their target-date funds. Seventeen of 39 firms saw more assets leave than enter their target-date mutual funds in 2018. Among them:

- ▶ T. Rowe Price: With roughly \$13.5 billion in estimated net outflows in 2018 from its target-date mutual funds, T. Rowe Price saw the largest estimated net outflows for the second year in a row. However, the firm's sizable asset growth in its CIT offering offset the fund outflows.
- ▶ Principal: Principal experienced \$3.2 billion in estimated outflows and has seen its market share steadily erode over the past 10 years.
- ▶ American Century: American Century's market share peaked at nearly 2% in 2016, but the firm has seen outflows the past two calendar years, including \$2.9 billion in 2018.
- ▶ Wells Fargo: Wells Fargo's fourth-consecutive year of significant net outflows—more than \$1 billion each year—from its target-date mutual funds has brought the firm's assets down to \$2.9 billion at year-end 2018 from \$16.8 billion at year-end 2014. (Wells Fargo jettisoned longtime subadvisor Global Index Advisors from its legacy target-date offering in July 2017, handing over the management of that series to an in-house team.)
- ▶ Fidelity: After three years of significant outflows, Fidelity appeared to have stopped the bleeding in 2017 when net redemptions largely ceased, but outflows edged higher in 2018 to \$1.2 billion. However, Fidelity saw positive net flows in 2018 when considering flows to its target-date CITs.

Exhibit 8 Assets and Estimated Net Flows for U.S. Target-Date Mutual Funds by Firm, 2018 versus 2017

Fund Name	Total Net Assets (USD Mil)		Estimated Net Flow (USD Mil)	
	2018	2017	2018	2017
Vanguard	396,175.3	381,489.8	40,788.1	50,617.2
Fidelity Investments	210,736.6	227,500.5	-1,168.5	-473.2
T. Rowe Price	142,336.1	165,573.8	-13,457.1	-9,546.0
American Funds	104,365.1	88,662.1	21,186.5	24,114.7
JPMorgan	50,278.6	53,498.5	1,197.7	672.7
TIAA Investments	45,128.1	43,578.5	4,952.4	6,075.0
BlackRock	28,068.0	18,474.3	3,919.2	4,561.7
Principal Funds	20,829.8	26,371.5	-3,211.8	-3,503.7
American Century Investments	15,179.3	19,014.5	-2,849.7	-362.7
John Hancock	14,944.8	17,163.2	-977.0	-1,466.9
KP Funds	7,758.8	6,884.0	1,413.9	676.2
Voya	6,827.6	6,987.5	359.7	748.7
Great-West Funds	6,086.4	7,467.8	-880.6	-191.2
MassMutual	5,870.5	2,467.6	3,852.5	-237.0
State Street Global Advisors	5,595.7	4,417.2	1,611.1	2,736.2
Schwab Funds	4,572.9	4,464.9	484.5	402.6
USAA	4,195.3	4,558.5	-17.6	35.9
GuideStone Funds	3,093.1	2,986.6	299.8	307.3
Wells Fargo Funds	2,962.5	5,522.9	-2,312.7	-4,652.1
MFS	2,802.9	2,787.7	192.1	-155.0
Nationwide	1,616.5	1,885.2	-137.7	-137.6
Putnam	1,004.3	1,048.9	30.0	106.2
Dimensional Fund Advisors	763.3	615.0	206.7	223.5
AllianceBernstein	749.5	724.1	93.1	63.6
MainStay	639.9	763.4	-53.3	-71.2
Manning & Napier	582.3	609.1	2.9	-13.4
Franklin Templeton Investments	526.9	547.3	17.6	-29.0
PIMCO	517.4	480.5	83.1	22.8
Transamerica	453.8	590.6	-98.2	32.6
AXA Equitable	434.3	479.3	-13.4	31.7
BMO Funds	331.9	351.9	8.9	-110.2
Allianz Funds	319.3	457.9	-106.0	14.4
PGIM Funds (Prudential)	205.2	118.4	63.2	111.8
Invesco	194.9	255.9	-52.0	-28.4
Harbor	161.9	177.0	-2.3	7.9
Goldman Sachs	56.1	254.0	-189.1	-16.5
1290 Funds	44.4	24.7	22.1	22.2
Natixis Funds	31.5	30.8	3.2	26.9
Columbia	16.9	18.5	-0.6	18.1

Source: Morningstar, Inc. Data as of 12/31/18.

Collective Investment Trusts: A Lower-Cost Alternative

The demand for lower-cost options has propelled the growth in target-date series offered as collective investment trusts, which typically cost less than mutual funds. (CITs are designed for qualified institutional investors and aren't subject to the same regulations or public disclosure requirements as mutual funds.)

Because investment firms voluntarily report CIT information to firms such as Morningstar, Morningstar's CIT database may not capture every target-date CIT offering. However, our data coverage, coupled with our analysts' regular discussions with the major target-date providers, has afforded perspectives on key asset and flow trends in the CIT space. Exhibit 9 shows the year-over-year change in total assets in target-date CITs for the 10 largest providers of target-date mutual funds as reported to Morningstar, plus asset and flow data for other CIT series with more than \$1 billion in assets.

The inclusion of target-date CIT assets nearly doubles the size of the target-date universe. Assets in target-date strategies from the providers shown in Exhibit 9 totaled \$1.72 trillion at year-end 2018 with an estimated \$662.4 billion in target-date CITs to go with \$1.09 trillion in mutual funds. Target-date CIT assets grew significantly to \$662.4 billion in 2018 from \$633.1 billion in 2017. Assuming the average return on target-date CIT assets resembled that of target-date fund assets, target-date CITs' asset growth in 2018 was largely attributable to significant net inflows.

Adding firms' mutual fund and CIT assets provides a more comprehensive view of the competitive landscape. While Vanguard already held the top spot for target-date mutual funds at year-end 2018, an additional \$253.0 billion in target-date CITs lengthened its lead over peers, bringing the firm's total target-date assets to an astounding \$649.1 billion. Fidelity and T. Rowe Price remained in second and third place, respectively, when looking at total target-date assets, but T. Rowe Price's \$79.1 billion in assets in target-date CITs at year-end 2018 more than doubled Fidelity's \$33.4 billion. Indeed, T. Rowe Price saw a significant asset growth in its target-date CITs in 2018, up from \$58.9 billion at year-end 2017. BlackRock's \$122.2 billion in target-date CITs—the second-highest amount—lifted the firm to the fourth spot, bumping American Funds. In addition to Vanguard and BlackRock, the following firms each had more assets in their target-date CITs than their target-date mutual funds at year-end 2018: Principal, State Street Global Advisors, Schwab, Wells Fargo, and Putnam. Eight of the 10 largest providers, in terms of total target-date assets, offered their strategy through both mutual fund and CIT vehicles.

The firms that only offer target-date CITs aren't among the largest providers of target-date funds. With \$6.2 billion in assets, flexPATH was the largest CIT-only provider at year-end 2018, and no other CIT-only provider had more than \$5 billion in total target-date assets, according to Morningstar's CIT database.

Exhibit 9 Assets and Market Share of U.S. Target-Date Mutual Funds and Collective Investment Trusts

Provider	2018 Target-Date (USD Mil)				2017 Target-Date (USD Mil)			
	Mutual Fund	Estimated CIT	Estimated Total	Estimated Total Market Share (%)	Mutual Fund	Estimated CIT	Estimated Total	Estimated Total Market Share (%)
Vanguard	396,175.3	252,954.2	649,129.5	37.8	381,489.8	241,318.6	622,808.4	36.5
Fidelity Investments	210,736.6	33,482.1	244,218.7	14.2	227,500.5	29,701.9	257,202.4	15.1
T. Rowe Price	142,336.1	79,149.7	221,485.8	12.9	165,573.8	58,884.2	224,458.0	13.2
BlackRock	28,068.0	122,195.1	150,263.1	8.7	18,474.3	126,846.4	145,320.8	8.5
American Funds	104,365.1	—	104,365.1	6.1	88,662.1	—	88,662.1	5.2
JPMorgan	50,278.6	34,924.9	85,203.6	5.0	53,498.5	34,305.1	87,803.6	5.2
Principal Funds	20,829.8	35,466.0	56,295.8	3.3	26,371.5	34,490.1	60,861.6	3.6
State Street	5,595.7	44,380.9	49,976.6	2.9	4,417.2	40,908.0	45,325.2	2.7
TIAA Investments	45,128.1	—	45,128.1	2.6	43,578.5	—	43,578.5	2.6
American Century Inv.	15,179.3	5,345.8	20,525.1	1.2	19,014.5	4,662.1	23,676.6	1.4
Schwab Funds	4,572.9	13,669.7	18,242.6	1.1	4,464.9	14,357.5	18,822.3	1.1
John Hancock	14,944.8	—	14,944.8	0.9	17,163.2	—	17,163.2	1.0
Wells Fargo Funds	2,962.5	11,255.4	14,217.8	0.8	5,522.9	11,445.9	16,968.8	1.0
Voya	6,827.6	2,123.5	8,951.1	0.5	6,987.5	1,997.8	8,985.4	0.5
Great-West	6,086.4	1,364.8	7,451.2	0.4	7,467.8	1,340.5	8,808.3	0.5
flexPATH	—	6,248.5	6,248.5	0.4	—	4,872.7	4,872.7	0.3
Putnam	1,004.3	4,049.3	5,053.6	0.3	1,048.9	3,261.8	4,310.6	0.3
VantagePoint	—	4,576.8	4,576.8	0.3	—	5,107.3	5,107.3	0.3
UBS/Morningstar	—	3,973.2	3,973.2	0.2	—	3,932.4	3,932.4	0.2
Aon Hewitt	—	3,742.8	3,742.8	0.2	—	4,053.8	4,053.8	0.2
BNY Mellon	—	1,990.5	1,990.5	0.1	—	1,959.2	1,959.2	0.1
Russell	—	1,460.1	1,460.1	0.1	—	2,015.9	2,015.9	0.1
Northern Trust	—	N/A	N/A	N/A	—	7,638.0	7,638.0	0.4
	662,353.3	1,717,444.5			633,099.3	1,704,335.1		

Source: Morningstar, Inc. Data as of 12/31/18.

A glimpse at the largest target-date providers' 2018 estimated net CIT flows sheds further insight into the overall state of investor demand. Aside from BlackRock, the largest providers supplied Morningstar manager research analysts with the 2018 estimated net flows to their target-date CITs, as seen in Exhibit 10. In addition to its market-leading \$40 billion in estimated target-date fund net inflows in 2018, Vanguard also saw roughly \$28 billion in CIT net inflows. The picture also brightens considerably for Fidelity and T. Rowe Price, both of which saw inflows to their target-date CITs in 2018 more than offset outflows from their target-date mutual funds. JPMorgan also saw higher estimated net flows to its target-date CITs than target-date mutual funds. American Funds and TIAA-CREF didn't have assets in target-date CITs in 2018, though American Funds announced plans for a CIT offering in 2018 and expects to receive assets in 2019.

Exhibit 10 2018 Estimated Net Flows to Target-Date CITs and Mutual Funds of Largest Providers














































































Provider	CIT (USD Mil)	Mutual Fund (USD Mil)	Total (USD Mil)
Vanguard	28,400.0	40,788.1	69,188.1
Fidelity Investments	7,600.0	-1,168.5	6,431.5
T. Rowe Price	21,400.0	-13,457.1	7,942.9
American Funds	—	21,186.5	21,186.5
JPMorgan	2,515.0	1,197.7	3,712.7
TIAA Investments	—	4,952.4	4,952.4
BlackRock	(Undisclosed)	3,919.2	N/A

Each provider supplied its respective CIT value. The mutual fund values come from Morningstar, Inc. Data as of 12/31/18.

In many instances, the target-date provider applies the same general approach to both its mutual funds and CITs. However, investors should be aware that subtle differences may exist, such as the underlying holdings and the approach to securities lending.

Morningstar recently began assigning Morningstar Analyst Ratings to CITs. Exhibit 11 shows the Morningstar Analyst Ratings for the 16 series of target-date CITs that were under coverage at the time of this report's publication. Morningstar analysts apply the same Analyst Ratings methodology used for mutual funds to CITs with one exception—they do not assign a Price rating for target-date CITs because of the limited transparency of fees.

Exhibit 11 Morningstar Analyst Ratings for Target-Date Collective Investment Trusts

Target-Date Series Name	Morningstar Analyst Rating	Pillars ( Positive  Neutral  Negative)				
		Process	People	Performance	Price	Parent
American Century Target Date	Neutral				N/A	
BlackRock LifePath Idx	 Gold				N/A	
BlackRock LifePath Index	 Gold				N/A	
BlackRock LifePath Index Non-Lendable	 Gold				N/A	
IndexSelect Aggressive Retirement	Neutral				N/A	
IndexSelect Conserv Retirement	Neutral				N/A	
IndexSelect Moderate Retirement	Neutral				N/A	
JPMCB SmartRetirement	 Gold				N/A	
JPMCB SmartRetirement Passive Blend	 Gold				N/A	
Manning & Napier Rtmt Target	 Bronze				N/A	
Principal Lifetime Hybrid Target	Neutral				N/A	
Schwab Managed Retirement Trust	Neutral				N/A	
SSgA Target Retire Lending	 Silver				N/A	
SSgA Target Retire Non-Lending	 Silver				N/A	
T. Rowe Price Retire	 Silver				N/A	
Vanguard Target Retire	 Gold				N/A	

Source: Morningstar, Inc. Data as of 5/9/19.

Process

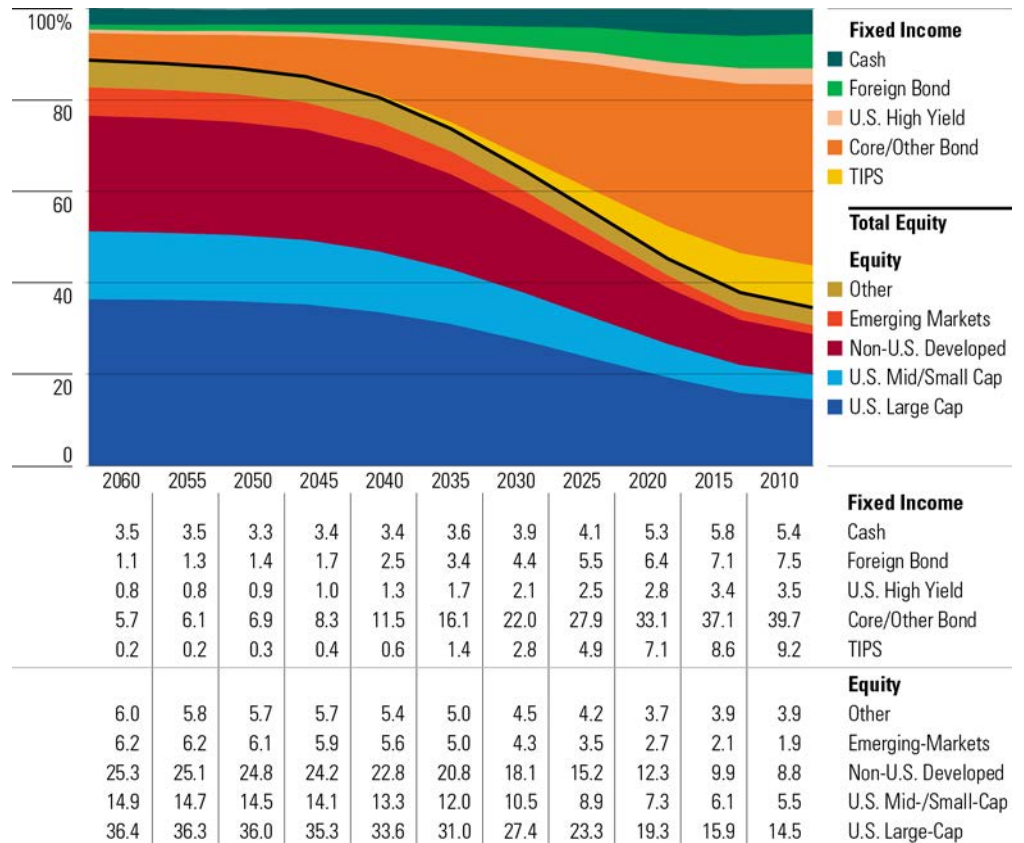
Given their default role, broad diversification, and shifting asset allocation, target-date funds may possibly serve as an investor's single retirement-plan investment for decades. This raises the stakes when assessing a target-date series' merits, including the investment approach underpinning a series. This section explores "process" areas that help investors identify how an approach may stand out, while also highlighting a few key upcoming enhancements to the Process section of the Morningstar Target-Date Fund Series Reports.

Peeling Back a Layer: The Sub-Asset-Class Glide Path

A shifting asset allocation as an investor approaches retirement sets target-date strategies apart from others. A look at a target-date series' strategic equity glide path—the anticipated equity stake at different points before and after the target retirement date—can yield insights into target-date managers' overarching philosophy and approach for a series. A comparison of strategic equity glide paths will continue to be featured in the Morningstar Target-Date Fund Series Reports, but sub-asset-class glide-path analytics will be an insightful addition to those reports. The sub-asset-class glide-path data will provide further clarity into the makeup of series' underlying equity and bond portfolios and how they shift over time.

Morningstar first introduced sub-asset-class glide-path analysis in its 2015 Target-Date Fund Landscape report. For background, we build sub-asset-class glide paths by looking at each security held within a target-date fund, assigning each type of security to one of 10 subasset classes, and rolling up the security weights to arrive at a sub-asset-class allocations. We repeat this process for all funds in a series to form a sub-asset-class glide path with a representative portfolio for each target date between 2010 and 2060. After building a sub-asset-class glide path for each series, we calculate a peer average sub-asset-class glide path that looks beyond the stock/bond split, showing how exposures to subasset classes change depending on the proximity to the target date. Sub-asset-class glide paths facilitate comparison between series, conferring an understanding of how one series' approach may differ from another's.

This year's peer-group average sub-asset-class glide path, shown in Exhibit 12, included data from 53 target-date series. Sub-asset-class glide paths that didn't appear to accurately reflect a series' exposures as well as those with incomplete or inaccurate holdings were excluded. (Exhibit 13 provides a breakdown of the target-date series included in the peer average sub-asset-class glide path.) The peer average sub-asset-class glide path will serve as the baseline for comparisons in the forthcoming Target-Date Fund Series Reports.

Exhibit 12 Peer Average Sub-Asset-Class Glide Path

Source: Morningstar, Inc. Data as of 12/31/18.

Exhibit 13 Peer Average Sub-Asset-Class Glide Path: Included and Excluded Series

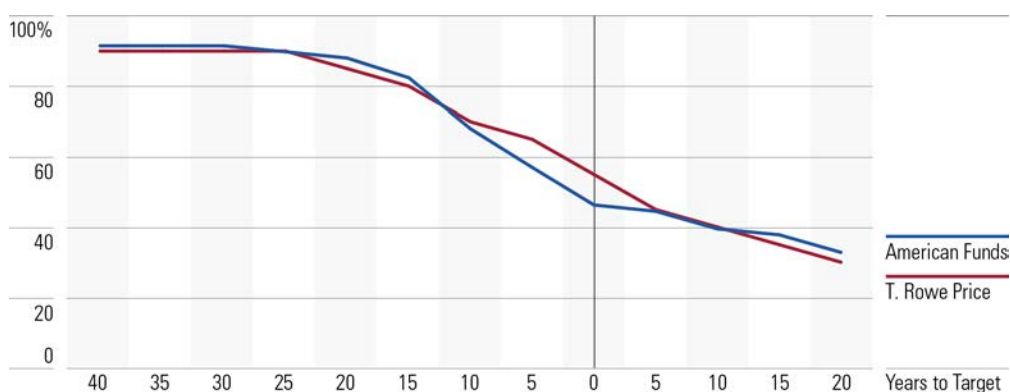
Included		Excluded
1290 Retirement	MainStay Retirement	Columbia Adaptive Retirement
AllianceBernstein Multi-Manager Select	Manning & Napier Target	Fidelity Managed Retirement
AllianzGI Retirement	MassMutual RetireSMART by JPM	Fidelity Simplicity RMD
American Century One Choice	MassMutual Select TRP Retirement	Invesco Balanced-Risk Retirement
American Funds Trgt Date Rtrmt	MFS Lifetime	Nationwide Destination
AXA Target Allocation	Principal Lifetime Hybrid	Natixis Sustainable Future
BlackRock LifePath Dynamic	Principal LifeTime	PIMCO RealPath Blend
BlackRock LifePath Index	Prudential Day One Target Date	PIMCO RealPath
BlackRock LifePath Smart Beta	Schwab Target Index	Putnam RetirementReady
BMO Target Date Retirement Funds	Schwab Target	T. Rowe Price Retirement Income
Dimensional Target Date Retirement Income	State Street Target Retirement	
Fidelity Advisor Freedom	T. Rowe Price Retirement	
Fidelity Flex Freedom	T. Rowe Price Target Retire	
Fidelity Freedom Blend	TIAA-CREF Lifecycle Index	
Fidelity Freedom Index	TIAA-CREF Lifecycle	
Fidelity Freedom	Transamerica ClearTrack	
Franklin LifeSmart	USAA Target Retirement Funds	
Goldman Sachs Target Date Portfolio	Vanguard Target Retirement	
Great-West Lifetime Conservative	Voya Index Solution	
Great-West Lifetime	Voya Solution	
Great-West SecureFoundation Lifetime	Voya Target Retirement	
Guidestone Funds MyDestination	Wells Fargo Dynamic Target	
Harbor Target Retirement	Wells Fargo Target	
Invesco Peak Retirement		
John Hancock Multi-Index Lifetime		
John Hancock Multi-Index Preservation		
John Hancock Multimanager Lifetime		
JPMorgan SmartRetirement Blend		
JPMorgan SmartRetirement		
KP Retirement Path		

Source: Morningstar, Inc. Data as of 12/31/18.

Pinpointing Hidden Differences

Comparing sub-asset-class glide paths may reveal significant differences in approaches not apparent by examining the higher-level stock/bond split. For example, at first glance, the strategic equity glide path of the American Funds Target Retirement series doesn't appear to differ dramatically from the one for the T. Rowe Price Retirement series. Exhibit 14 illustrates that these two equity glide paths tend to stay within 3 percentage points of each other aside from a short span from five years before the target date until five years after the target date, when the T. Rowe Price series has a higher equity stake. Looking at the equity glide paths, an investor may conclude prematurely that the approaches behind these two series are quite similar.

Exhibit 14 Strategic Equity Glide Path: American Funds Target Retirement vs. T. Rowe Price Retirement



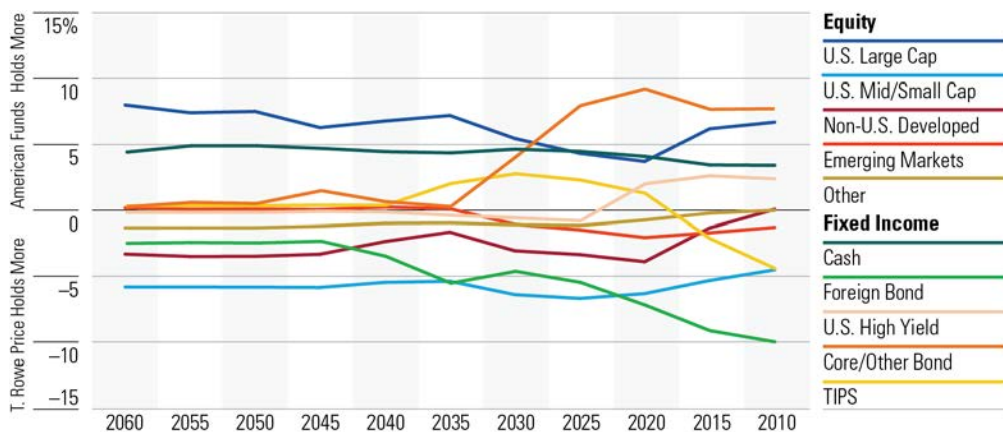
Source: Morningstar, Inc. Data as of 12/31/18.

But the two series' sub-asset-class glide paths show meaningful differences in both their equity and bond portfolios. Exhibit 15 shows the differences in the series' allocations across the glide path for 10 subasset classes at year-end 2018. Lines above zero on the y-axis indicate that American Funds Target Retirement series held more of that subasset class than T. Rowe Price Retirement series, and lines below zero show the T. Rowe Price series held more. The American Funds' series tends to hold bigger stakes in U.S. large-cap equities—up to 8 percentage points more in the 2060 fund—than the T. Rowe Price series, even at target dates where the series' overall strategic equity stakes were nearly identical. Conversely, the T. Rowe Price series held more in U.S. mid-/small-cap equities, non-U.S. developed stocks, and emerging-markets equities than the American Funds series.

A comparison of sub-asset-class glide paths also captures significant differences in the series' fixed-income exposures. The American Funds series held 4 to 5 percentage points more in cash than the T. Rowe Price series across the glide path, reflecting higher residual cash holdings in the underlying funds. Furthermore, while the two series had similar exposure to U.S. core bonds for investors early in their career (that is, the 2060, 2055, and 2050 target dates), with approximately five years left until its target date, American Funds' 2025 fund held nearly 8 percentage points more in U.S. core bonds. T. Rowe

Price's series allocated more to foreign bonds, a difference that grew to over 10 percentage points in the 2010 fund.

Exhibit 15 Sub-Asset-Class Glide-Path Comparison: American Funds Target Retirement vs. T. Rowe Price Retirement

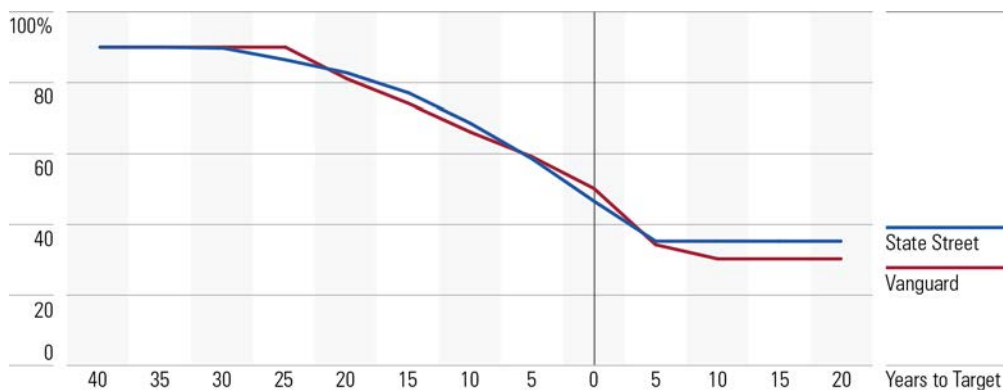


Source: Morningstar, Inc. Data as of 12/31/18.

"Passive" Series of Target-Date Funds Really Don't Exist

While target-date series that hold mostly index vehicles have been wildly popular in recent years in large part because of their low costs, a comparison of sub-asset-class glide paths of series that hold mainly index funds uncovers meaningful differences, thwarting the notion that these series are truly passive. To illustrate, Exhibit 16 shows the strategic equity glide paths of the State Street Target Retirement and Vanguard Target Retirement series; both series use index funds exclusively as their underlying building blocks. Their strategic equity glide paths stay within 4 percentage points of each other until 10 years after the target date, when State Street's 35% equity stake exceeds Vanguard's 30%. At a surface level, the series' glide paths look largely alike.

Exhibit 16 Strategic Equity Glide Path: State Street Target Retirement vs. Vanguard Target Retirement

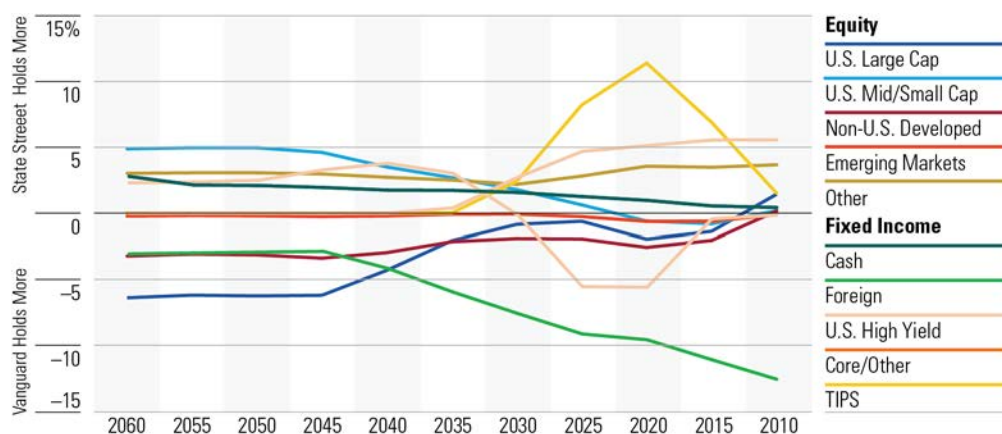


Source: Morningstar, Inc. Data as of 12/31/18.

Yet, the two series look quite different at the sub-asset-class glide-path level. Exhibit 17 shows that Vanguard's series held 6 percentage points more in U.S. large-cap equities than State Street's series for investors early in their careers (that is, 2060, 2055, and 2050 target dates) at year-end 2018. Meanwhile, State Street's series placed greater emphasis on U.S. mid-/small-cap stocks. (Vanguard uses a single broad market index fund for its U.S. equity exposure, whereas State Street has separate holdings by market cap.) While the series had similar exposure—within 1 percentage point—to emerging-markets equity, the Vanguard series tended to hold slightly more in non-U.S. developed equities.

The sub-asset-class glide-path differences were even more pronounced on the fixed-income side. The State Street's 2020 fund held over 11 percentage points more in Treasury Inflation-Protected Securities than the Vanguard 2020 fund, though that gap shrinks dramatically for the 2010 portfolios. Moreover, the Vanguard series' 2010 portfolio held nearly 13 percentage points more in foreign bonds while State Street's allocated more to high-yield bonds—Vanguard's series has only traces of high-yield bonds.

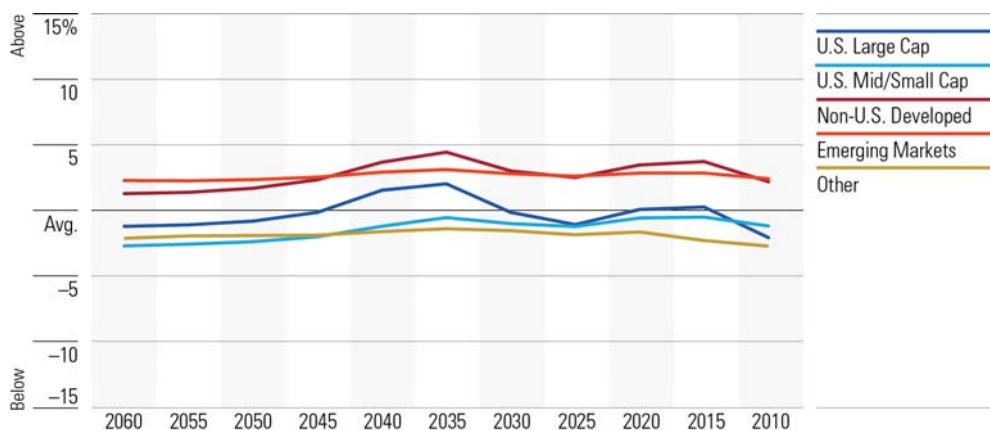
Exhibit 17 Sub-Asset-Class Glide-Path Comparison: State Street Target Retirement vs. Vanguard Target Retirement



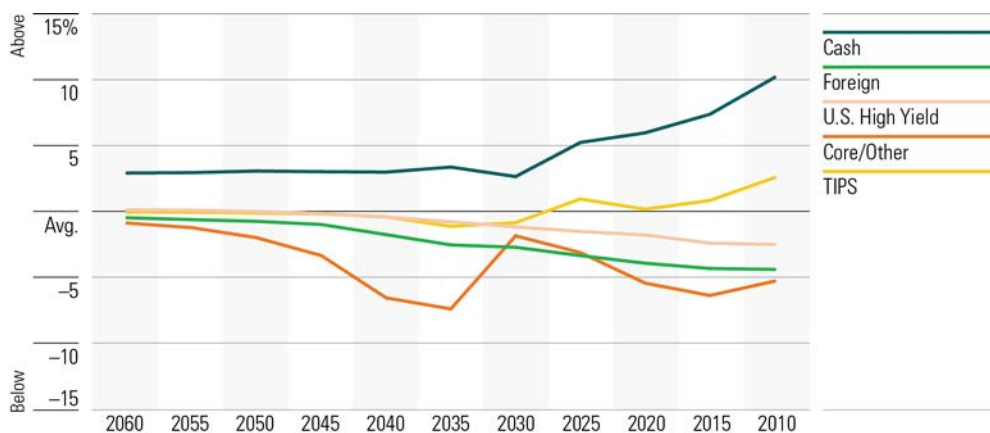
Source: Morningstar, Inc. Data as of 12/31/18.

Standing Out From the Norm?

The updated Target-Date Fund Series Reports will show how a target-date series' sub-asset-class glide path differs from the peer average sub-asset-class glide path. Exhibits 18 and 19 compare the sub-asset-class glide path of the Fidelity Freedom series equity and bond exposures against the peer average.

Exhibit 18 Sub-Asset-Class Glide-Path Comparison of Equity Portfolio: Fidelity Freedom vs. Peer Average

Source: Morningstar, Inc. Data as of 12/31/18.

Exhibit 19 Sub-Asset-Class Glide-Path Comparison of Bond Portfolio: Fidelity Freedom vs. Peer Average




Source: Morningstar, Inc. Data as of 12/31/18.

Underlying Funds: Going for the Gold

While the sub-asset-class glide path drills down to individual securities, target-date providers commonly construct target-date funds using underlying funds as the building blocks, creating another layer to evaluate. The Morningstar Analyst Rating gives investors a forward-looking opinion of a fund's prospects. The Target-Date Fund Series reports already display the Analyst Rating for a target-date series' top 10 holdings. However, the updated reports will also provide an asset-weighted summary of Analyst Ratings for the series. Exhibit 20 shows the breakdown of Analyst Ratings by target-date series as of year-end 2018, listing series by percentage in Morningstar Medalists—funds that receive a Gold, Silver, or Bronze rating.

The confidence of Morningstar's analysts in underlying fund lineups certainly varies by target-date series. Only 18 of the 63 series had most of their assets in Morningstar Medalists. Exhibit 20 shows 47 series because 16 series didn't have a single underlying fund with a Morningstar Analyst Rating. Twenty-nine series had between 0% and 50% in Morningstar Medalists. Five series had 90% or more in Morningstar Medalists, including Vanguard with 100%. Of the series with at least one fund with an Analyst Rating, the average percentage was approximately 40%. Putnam, Franklin, MainStay, T. Rowe Price, and Voya each had series with more than 20% of assets in Neutral-rated funds, but not a single Negative-rated fund was found in a target-date series.

Exhibit 20 Underlying Funds' Morningstar Analyst Ratings by Target-Date Series

Target-Date Series	 Gold	 Silver	 Bronze	% in Medalists	Neutral	Negative	Not Rated
Vanguard Target Retirement	67.5	32.5	0.0	100.0	0.0	0.0	0.0
Transamerica ClearTrack	38.0	53.9	5.3	97.2	0.8	0.0	2.0
Schwab Target Index	45.3	45.2	3.9	94.4	0.0	0.0	5.6
PIMCO RealPath Blend	45.3	37.6	8.9	91.8	1.4	0.0	6.8
American Funds Trgt Date Rtrmt	42.9	26.4	20.7	90.0	3.8	0.0	6.2
1290 Retirement	25.9	47.8	13.0	86.6	0.8	0.0	12.6
JPMorgan SmartRetirement Blend	0.0	36.7	41.6	78.3	4.4	0.0	17.3
PIMCO RealPath	16.1	59.4	0.0	75.5	1.7	0.0	22.8
Fidelity Freedom Index	50.5	0.0	20.4	70.9	0.0	0.0	29.1
BlackRock LifePath Smart Beta	0.0	21.5	47.7	69.2	0.0	0.0	30.8
Invesco Balanced-Risk Retirement	0.0	0.0	66.9	66.9	0.0	0.0	33.1
T. Rowe Price Retirement	9.5	9.0	46.1	64.6	18.5	0.0	16.9
Harbor Target Retirement	23.5	13.6	20.6	57.7	0.0	0.0	42.3
T. Rowe Price Retirement Income	8.7	7.5	39.8	56.0	21.3	0.0	22.6
T. Rowe Price Target Retire	8.5	7.4	39.3	55.3	20.0	0.0	24.7
JPMorgan SmartRetirement	0.0	29.1	26.1	55.2	5.0	0.0	39.8
AllianceBernstein Multi-Manager Select	0.4	34.3	18.0	52.7	6.8	0.0	40.5
BMO Target Date Retirement Funds	30.1	13.2	7.4	50.7	0.0	0.0	49.3
Goldman Sachs Target Date Portfolio	13.8	31.8	2.7	48.3	0.0	0.0	51.7
Dimensional Target Date Retirement Income	18.5	23.5	5.9	47.9	4.2	0.0	47.9
Schwab Target	26.2	5.7	14.8	46.7	0.0	0.0	53.3
Voya Index Solution	1.9	0.6	41.0	43.5	21.2	0.0	35.3
John Hancock Multi-Index Preservation	1.4	33.9	6.3	41.6	5.1	0.0	53.4
John Hancock Multi-Index Lifetime	11.1	24.3	5.6	41.0	4.7	0.0	54.4
Invesco Peak Retirement	0.0	17.4	16.4	33.8	15.4	0.0	50.8
MFS Lifetime	3.7	6.5	22.7	32.9	18.7	0.0	48.4
Voya Solution	1.6	16.7	12.6	30.9	10.0	0.0	59.1
Franklin LifeSmart	2.2	3.4	22.2	27.8	27.0	0.0	45.2
Principal LifeTime	0.0	2.9	24.5	27.4	3.6	0.0	69.0
BlackRock LifePath Index	22.7	4.0	0.0	26.7	0.0	0.0	73.3
Principal Lifetime Hybrid	0.0	0.0	19.1	19.1	3.8	0.0	77.1
John Hancock Multimanager Lifetime	0.0	7.5	7.0	14.5	1.8	0.0	83.7
MassMutual RetireSMART by JPM	1.8	7.9	2.4	12.2	0.0	0.0	87.8
Prudential Day One Target Date	0.0	10.6	0.0	10.6	0.0	0.0	89.4
Voya Target Retirement	1.5	6.9	1.5	9.9	3.1	0.0	86.9
KP Retirement Path	4.5	5.4	0.0	9.8	0.0	0.0	90.2
USAA Target Retirement Funds	0.0	0.0	8.4	8.4	12.9	0.0	78.7
BlackRock LifePath Dynamic	0.0	5.3	3.0	8.3	5.4	0.0	86.3
Nationwide Destination	0.0	0.0	5.7	5.7	0.9	0.0	93.3
MainStay Retirement	1.2	0.5	3.1	4.9	20.0	0.0	75.1
AllianzGI Retirement	0.0	3.1	1.1	4.2	2.0	0.0	93.8
State Street Target Retirement	0.0	2.0	1.7	3.7	3.2	0.0	93.0
Great-West Lifetime	0.0	0.0	1.5	1.5	0.0	0.0	98.5
Great-West Lifetime Conservative	0.0	0.0	1.3	1.3	0.0	0.0	98.7
American Century One Choice	0.0	0.0	0.0	0.0	3.5	0.0	96.5
Natixis Sustainable Future	0.0	0.0	0.0	0.0	8.9	0.0	91.1
Putnam RetirementReady	0.0	0.0	0.0	0.0	78.6	0.0	21.4

Source: Morningstar, Inc. Data as of 12/31/18. This exhibit excludes target-date series without an underlying fund that receives a Morningstar Analyst Rating.

People

The portfolio managers behind each target-date series make key decisions that can play a large part in determining the outcomes for investors. This section evaluates target-date fund series by portfolio manager depth, tenure, and turnover and also examines trends in manager ownership of fund shares.

Identifying Depth and Stability

Investors can take comfort in knowing that target-date funds, with their multidecade investment horizon, don't rely upon a single individual. Exhibit 21 sorts each target-date series by the tenure of the longest-serving manager on the series. It also displays the number of portfolio managers assigned to the series and the average tenure of those managers.

At year-end 2018, every target-date series listed more than one manager. (MFS and Schwab, which both had only one manager in 2017, added managers to their series in 2018.) On average, target-date series had three portfolio managers. Nineteen of the 63 target-date series had a manager with 10 years-plus tenure. Jerome Clark from T. Rowe Price is the longest-tenured target-date manager, having been at the helm of the T. Rowe Price Retirement series since September 2002. On average, the longest manager tenure for a target-date series was just over six and a half years.

Target-date managers on the same roster may play very different roles, from designing the glide path to researching underlying strategies to implementing the approach. While a reasonable starting point, a simple count of managers may not provide the full picture of a series' dedicated resources, making it worthwhile to evaluate the managers of each series.

Still, evaluating target-date series' manager tenure may provide investors with insight. For instance, series with longer manager tenures may inspire confidence that a prevailing approach will persist because of the steady presence of a manager. Meanwhile, shorter manager tenure may signal that a series has experienced sweeping changes in personnel and philosophy. For example, the Goldman Sachs Target Date Portfolio series' short tenures reflect the firm's decision to terminate Madison Asset Management as the series' subadvisor in 2018. Similarly, the Wells Fargo Target series dates to 1994, but its short tenures stem from the firm's termination of Global Index Advisors as the series' subadvisor in 2017. In both instances, the manager turnover resulted in material changes to the approach.

Exhibit 21 Number of Portfolio Managers and Manager Tenure by Target-Date Series

Series Name	Series' Inception Date	Number of Portfolio Managers	Series' Longest Manager Tenure (Years.)	Series' Average Manager Tenure (Years)
T. Rowe Price Retirement	9/30/02	2	16.3	9.8
Putnam RetirementReady	11/1/04	4	14.2	8.8
MFS Lifetime	9/29/05	2	13.3	6.8
TIAA-CREF Lifecycle	10/15/04	3	12.8	8.6
JPMorgan SmartRetirement	5/15/06	5	12.6	9.6
Franklin LifeSmart	8/1/06	2	12.4	10.0
AXA Target Allocation	8/31/06	4	12.4	7.6
MassMutual RetireSMART by JPM	12/31/03	3	12.1	4.2
American Century One Choice	8/31/04	4	12.0	6.8
Guidestone Funds MyDestination	12/29/06	2	12.0	8.4
American Funds Trgt Date Rtrmt	2/1/07	7	11.9	8.6
Principal LifeTime	3/1/01	3	11.6	8.3
MainStay Retirement	6/29/07	4	11.5	7.1
Voya Solution	4/29/05	2	11.0	8.7
Manning & Napier Target	3/28/08	3	10.8	9.5
Voya Index Solution	3/10/08	2	10.8	8.6
USAA Target Retirement Funds	7/31/08	2	10.4	5.5
AllianzGI Retirement	12/29/08	3	10.0	5.4
Harbor Target Retirement	1/2/09	3	10.0	10.0
Fidelity Managed Retirement	8/30/07	2	9.6	7.3
Fidelity Simplicity RMD	8/30/07	2	9.6	7.3
Invesco Balanced-Risk Retirement	1/31/07	5	9.3	9.3
TIAA-CREF Lifecycle Index	9/30/09	3	9.3	6.3
Fidelity Freedom Index	10/2/09	3	9.2	4.9
BlackRock LifePath Index	5/31/11	4	7.6	4.5
Fidelity Freedom	10/17/96	2	7.6	6.3
Fidelity Advisor Freedom	7/24/03	2	7.5	6.2
Schwab Target	7/1/05	2	6.9	3.7
JPMorgan SmartRetirement Blend	7/2/12	5	6.5	6.0
Voya Target Retirement	12/20/12	2	6.0	6.0
Vanguard Target Retirement	10/27/03	2	5.9	5.9
John Hancock Multi-Index Preservation	4/30/10	2	5.6	3.2
John Hancock Multimanager Lifetime	10/30/06	2	5.6	3.2
T. Rowe Price Target Retire	8/20/13	2	5.4	5.4
John Hancock Multi-Index Lifetime	11/7/13	2	5.1	3.0
KP Retirement Path	1/10/14	3	5.0	3.3
Great-West Lifetime	5/1/09	4	4.6	3.2
Great-West Lifetime Conservative	5/1/09	4	4.6	3.2
Great-West SecureFoundation Lifetime	11/13/09	4	4.6	3.2
Principal Lifetime Hybrid	9/30/14	3	4.3	3.4
State Street Target Retirement	9/30/14	2	4.3	2.6
AllianceBernstein Multi-Manager Select	12/15/14	4	4.0	3.9
Transamerica ClearTrack	3/2/15	3	3.8	3.4
BMO Target Date Retirement Funds	8/30/13	3	3.4	2.3
Dimensional Target Date Retirement Income	11/2/15	5	3.1	2.9

Source: Morningstar, Inc. Data as of 12/31/18.

Exhibit 21 Number of Portfolio Managers and Manager Tenure by Target-Date Series (Continued)

Series Name	Series' Inception Date	Number of Portfolio Managers	Series' Longest Manager Tenure (Years.)	Series' Average Manager Tenure (Years)
Wells Fargo Dynamic Target	11/30/15	3	3.1	2.8
PIMCO RealPath Blend	12/31/14	3	3.0	3.0
PIMCO RealPath	3/31/08	3	3.0	3.0
Schwab Target Index	8/25/16	2	2.4	1.4
BlackRock LifePath Dynamic	3/1/94	2	2.1	2.1
BlackRock LifePath Smart Beta	4/20/07	3	2.1	2.1
Nationwide Destination	8/29/07	3	2.1	1.7
Prudential Day One Target Date	12/13/16	3	2.0	1.6
1290 Retirement	2/27/17	4	1.9	1.9
Natixis Sustainable Future	2/28/17	13	1.9	1.1
T. Rowe Price Retirement Income	5/25/17	2	1.6	1.6
Fidelity Flex Freedom	6/8/17	2	1.5	1.5
Wells Fargo Target	3/1/94	3	1.5	1.5
Columbia Adaptive Retirement	10/24/17	2	1.2	1.2
Invesco Peak Retirement	12/29/17	2	1.0	1.0
MassMutual Select TRP Retirement	2/16/18	2	0.9	0.9
Fidelity Freedom Blend	8/31/18	2	0.4	0.4
Goldman Sachs Target Date Portfolio	10/1/07	2	0.1	0.1
Average		3.1	6.6	4.8

Source: Morningstar, Inc. Data as of 12/31/18.

Skin in the Game

Target-date fund investors can rightfully expect the funds' portfolio managers to invest alongside them. Coinvestment signals the managers' conviction in their approach. The updated Target-Date Fund Series report will disclose the aggregate amount that managers invest across all funds in a target-date series. (Occasionally, target-date managers invest in multiple funds within a series.)

Few target-date fund managers — 16 of the roughly 140 — had invested more than \$1 million (the highest threshold disclosed in mutual fund filings) in their series as of year-end 2018. Exhibit 22 lists those 16 managers and the series in which they invest more than \$1 million. While some managers may invest in CIT vehicle of their target-date series, that's not publicly available data.

In cases where managers run multiple series, the investment amounts may reveal the managers' highest conviction. Six of the 16 managers listed in Exhibit 22 oversee multiple target-date series, and four of them invest more in a higher-cost, legacy offering that relies predominantly on actively managed underlying holdings. (Hans Erickson and John Cuniff invest more than \$1 million in both the TIAA-CREF Lifecycle and TIAA-CREF Lifecycle Index series.) The managers' conviction counters the massive flight to lower-cost series in recent years, suggesting that investors may be moving into offerings with less manager conviction. Furthermore, portfolio managers have consistently expressed to Morningstar analysts that they expect their series with active funds to fare better over the long run.

Exhibit 22 Portfolio Managers With Over \$1 Million Personally Invested in Their Target-Date Series

Manager Name	Target-Date Series	Target-Date Fund	Manage Multiple Series?
Richard A. Weiss	American Century One Choice	American Century One Choice In Ret	No
Alan N. Berro	American Funds Target Date Retirement	(Not Disclosed)	No
Andrew B. Suzman	American Funds Target Date Retirement	(Not Disclosed)	No
Bradley J. Vogt	American Funds Target Date Retirement	(Not Disclosed)	No
James B. Lovelace	American Funds Target Date Retirement	(Not Disclosed)	No
Jody F. Jonsson	American Funds Target Date Retirement	(Not Disclosed)	No
John H. Smet	American Funds Target Date Retirement	(Not Disclosed)	No
Wesley K. Phoa	American Funds Target Date Retirement	(Not Disclosed)	No
Andrew Dierdorf	Fidelity Freedom	Fidelity Freedom 2035	Yes
Brett F. Sumsion	Fidelity Freedom	Fidelity Freedom 2030	Yes
Nathan Thoof	John Hancock Multimanager Lifetime	JHancock Multimanager 2045 Lifetime	Yes
Anne Lester	JPMorgan SmartRetirement	JPMorgan SmartRetirement 2030	Yes
Jonathan B. Swaney	MainStay Retirement	MainStay Retirement 2040	No
Joseph C. Flaherty	MFS Lifetime	MFS Lifetime Income	No
Hans L. Erickson	TIAA-CREF Lifecycle	TIAA-CREF Lifecycle 2030	Yes
Hans L. Erickson	TIAA-CREF Lifecycle Index	TIAA-CREF Lifecycle Index 2030	Yes
John Cunniff	TIAA-CREF Lifecycle	TIAA-CREF Lifecycle 2030	Yes
John Cunniff	TIAA-CREF Lifecycle Index	TIAA-CREF Lifecycle Index 2030	Yes

Source: Morningstar, Inc. Data as of 12/31/18.

Tracking Manager Roster Changes

Changes to the manager roster may result in adjustments to a series' investment approach over time, making it important to track changes. In addition to showing the current managers, the updated Target-Date Fund Series Reports will list a series' departed managers—up to 10 total current and past managers—and provide a timeline of start and end dates for those managers.

Target-date funds saw a fair amount of changes to their manager rosters in 2018. Exhibit 23 displays target-date series that saw a manager change in 2018. All told, 30 target-date series—nearly half of all series—experienced change in 2018. Several additions appeared to bolster stable rosters of tenured managers, including the additions of Finola McGuire Foley to Fidelity Freedom Index and Steve Sedmak to TIAA-CREF's offerings. Other instances appear to reflect the filling of a vacancy, such as the addition of Robert Sykes to John Hancock's series in February 2018 when Marcelle Daher exited. Despite only launching in February 2017, the Natixis Sustainable Futures series already saw substantial turnover in its manager roster in 2018.

Exhibit 23 Target-Date Series' Portfolio Manager Turnover in 2018

Target-Date Series	Action	Manager Name	Start Date	End Date
AllianceBernstein Multi-Manager Select	Removed	Vadim Zlotnikov	12/15/14	1/16/18
AllianzGI Retirement	Removed	Michael Stamos	10/1/16	2/1/18
American Century One Choice	Added	Vidya Rajappa	1/29/18	—
	Removed	G. David MacEwen	12/31/13	12/1/18
BlackRock LifePath Index	Added	Greg Savage	4/30/18	—
Columbia Adaptive Retirement	Removed	Jeffrey L. Knight	10/24/17	5/24/18
Fidelity Freedom Index	Added	Finola McGuire Foley	6/15/18	—
Goldman Sachs Target Date Portfolio	Removed	David Hottmann	10/1/07	11/30/18
	Removed	Patrick F. Ryan	10/1/07	11/30/18
	Added	Christopher Lvoff	11/30/18	—
	Added	Raymond Chan	11/30/18	—
Great-West Lifetime	Added	Maria L. Mendelsberg	4/30/18	—
Great-West Lifetime Conservative	Added	Maria L. Mendelsberg	4/30/18	—
Great-West SecureFoundation Lifetime	Added	Maria L. Mendelsberg	4/30/18	—
Guidestone Funds MyDestination	Removed	Robert J. Benson	1/31/16	10/15/18
John Hancock Multi-Index Lifetime	Removed	Marcelle Daher	11/7/13	2/20/18
	Added	Robert Sykes	2/20/18	—
	Removed	Robert "Bob" Boyda	11/7/13	7/12/18
John Hancock Multi-Index Preservation	Removed	Marcelle Daher	5/15/13	2/20/18
	Added	Robert Sykes	2/20/18	—
	Removed	Robert "Bob" Boyda	4/30/10	7/12/18
John Hancock Multimanager Lifetime	Removed	Marcelle Daher	5/15/13	2/20/18
	Added	Robert Sykes	2/20/18	—
	Removed	Robert "Bob" Boyda	1/1/10	7/12/18
KP Retirement Path	Added	Mark Andersen	5/1/18	—
MassMutual RetireSMART by JPM	Removed	Bruce Picard	3/31/06	6/22/18
	Added	Anne Lester	9/24/18	—
	Added	Daniel Oldroyd	9/24/18	—
MFS Lifetime	Added	Natalie I. Shapiro	9/1/18	—
Natixis Sustainable Future	Removed	Elizabeth Yakes	2/28/17	5/25/18
	Added	Anthony Wicklund	5/25/18	—
	Removed	Xavier Combet	2/28/17	10/15/18
	Added	Curt L. Overway	10/15/18	—
	Added	Daniel Price	10/15/18	—
	Added	David Belloc	10/15/18	—
	Added	Marina Gross	10/15/18	—
	Removed	Suzanne Senellart	2/28/17	11/1/18
	Added	Amber Fairbanks	11/1/18	—
Principal LifeTime	Removed	Jeffrey R. Tyler	3/1/11	3/1/18
	Removed	Matthew D. Annenberg	3/1/13	6/18/18
Principal Lifetime Hybrid	Removed	Jeffrey R. Tyler	9/30/14	3/1/18
Prudential Day One Target Date	Added	George Sakoulis	2/26/18	—
	Removed	Ted Lockwood	12/13/16	9/28/18
Schwab Target Index	Added	Patrick Kwok	7/27/18	—
Schwab Target	Added	Patrick Kwok	7/27/18	—

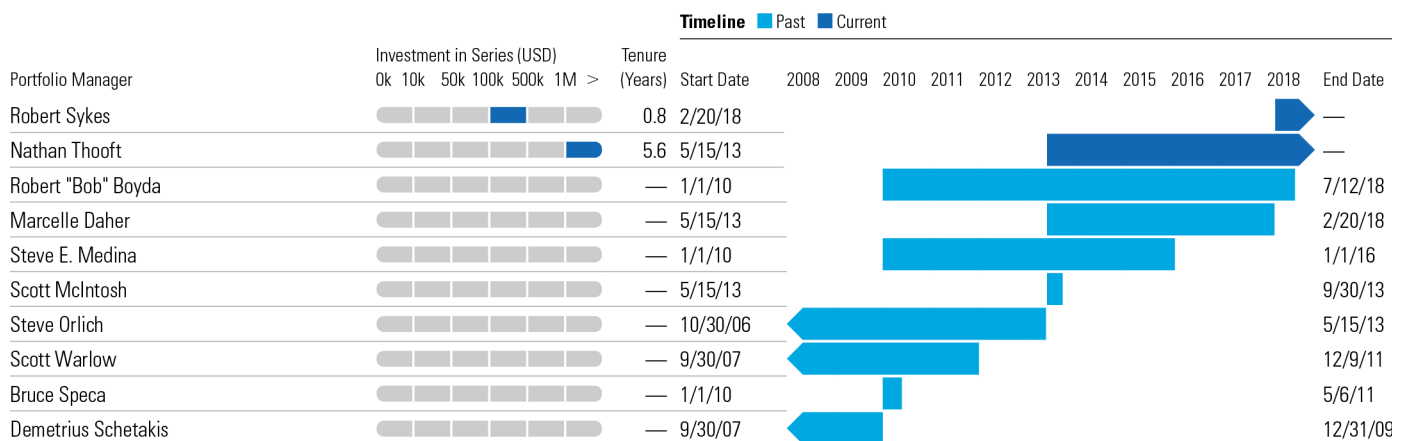
Source: Morningstar, Inc. Data as of 12/31/18. This exhibit does not include target-date series that launched in 2018.

Exhibit 23 Target-Date Series' Portfolio Manager Turnover in 2018 (Continued)

Target-Date Series	Action	Manager Name	Start Date	End Date
State Street Target Retirement	Removed	Lisa Khatri	9/30/14	1/25/18
	Added	Michael Narkiewicz	1/25/18	—
TIAA-CREF Lifecycle	Added	Steve Sedmak	10/1/18	—
TIAA-CREF Lifecycle Index	Added	Steve Sedmak	10/1/18	—
USAA Target Retirement Funds	Removed	Brian Herscovici	10/1/16	6/1/18
	Added	Lance Humphrey	6/7/18	—
Voya Index Solution	Removed	Jody I. Hrazanek	12/18/15	5/11/18
Voya Solution	Removed	Jody I. Hrazanek	12/18/15	5/11/18
Voya Target Retirement	Removed	Jody I. Hrazanek	12/18/15	5/11/18

Source: Morningstar, Inc. Data as of 12/31/18. This exhibit does not include target-date series that launched in 2018.

Using the John Hancock Multimanager Lifetime series as an example, Exhibit 24 shows what will be displayed in the updated Target-Date Fund Series Reports in the near future. The exhibit captures the managers' tenure, the amount of money they personally invest in the target-date series they run, and a timeline of management changes.

Exhibit 24 Target-Date Series Management Exhibit: John Hancock Multimanager Lifetime

Source: Morningstar, Inc. Data as of 12/31/18.

Performance

Target-date funds' aim to deliver on a multidecade objective complicates the assessment of their performance results and having multiple funds within a series that continually shift only adds to the complexity. This section seeks to help investors gain a comprehensive view of performance by comparing results versus peers from both return and risk-adjusted perspectives, addressing the benchmarking conundrum, looking at results by funds' fees, and unveiling new attribution methodology for target-date funds coming in the updated Target-Date Fund Series Report.

Stacking Up Results Versus Peers

With a target year in each target-date fund's name, placing each fund into an appropriate peer group according to its target year is straightforward. This also makes a comparison of results versus peers a fair evaluation of the available opportunity set. Exhibit 25 displays each target-date series' average Morningstar Category rank over trailing periods through year-end 2018 using a representative share class for each fund within a series. The representative share class, which will also be featured in the updated Target-Date Fund Series Reports along with the average ranks, aims to capture a fund's longest history while focusing on the lowest-cost share class available.

Few target-date series stood out with peer-beating ranks across all trailing periods. Only five series with funds across the entire glide path and with 10 years of performance history produced above-average ranks across all trailing periods: American Funds Target Date Retirement, BlackRock LifePath Dynamic, MFS Lifetime, T. Rowe Price Retirement, and Vanguard Target Retirement. (Notably, the BlackRock LifePath Dynamic series saw a significant change in late 2016 when BlackRock introduced tactical asset allocation to the series and expanded the underlying building blocks.)

The average trailing Morningstar Category ranks may also reveal a contrast between a series' short-term and long-term standings. For instance, Goldman Sachs Target Date Portfolio, Manning & Napier Target, and Wells Fargo Target series each posted top-quintile results in 2018 that begin to remedy those series' subpar 10-year results. Conversely, lackluster results in 2018 weighed on the solid long-term results of the John Hancock Multimanager Lifetime, JPMorgan SmartRetirement, Principal LifeTime, and TIAA-CREF Lifecycle series.

Exhibit 25 Trailing Average Category Ranks by Target-Date Series (Representative Share Class)

Name	Average Category Rank			
	1 Year	3 Year	5 Year	10 Year
1290 Retirement	5	—	—	—
AllianceBernstein Multi-Manager Select	70	31	—	—
AllianzGI Retirement	99	57	83	78
American Century One Choice	29	72	37	48
American Funds Trgt Date Rtrmt	6	3	1	5
AXA Target Allocation	61	51	73	87
BlackRock LifePath Dynamic	37	12	23	49
BlackRock LifePath Index	32	35	13	—
BlackRock LifePath Smart Beta	76	50	63	53
BMO Target Date Retirement Funds	54	34	27	—
Columbia Adaptive Retirement	15	—	—	—
Dimensional Target Date Retirement Income	63	45	—	—
Fidelity Advisor Freedom	50	22	24	35
Fidelity Flex Freedom	46	—	—	—
Fidelity Freedom Blend	—	—	—	—
Fidelity Freedom Index	20	21	21	—
Fidelity Freedom	65	25	18	45
Fidelity Managed Retirement	29	36	18	12
Fidelity Simplicity RMD	30	19	8	6
Franklin LifeSmart	24	93	83	44
Goldman Sachs Target Date Portfolio	12	74	34	57
Great-West Lifetime Conservative	27	76	64	—
Great-West Lifetime	71	54	42	—
Great-West SecureFoundation Lifetime	62	47	46	—
Guidestone Funds MyDestination	39	28	80	54
Harbor Target Retirement	57	77	81	—
Invesco Balanced-Risk Retirement	57	68	77	87
Invesco Peak Retirement	36	—	—	—
John Hancock Multi-Index Lifetime	57	15	18	—
John Hancock Multi-Index Preservation	12	54	50	—
John Hancock Multimanager Lifetime	80	35	36	8
JPMorgan SmartRetirement Blend	55	39	22	—
JPMorgan SmartRetirement	89	69	35	10
KP Retirement Path	20	36	—	—
MainStay Retirement	95	86	62	45
Manning & Napier Target	9	57	80	58
MassMutual RetireSMART by JPM	30	48	71	27
MassMutual Select TRP Retirement	—	—	—	—
MFS Lifetime	32	30	33	18
Nationwide Destination	69	51	54	52

Source: Morningstar, Inc. Data as of 12/31/18.

Exhibit 25 Trailing Average Category Ranks by Target-Date Series (Representative Share Class) (Continued)

Name	Average Category Rank			
	1 Year	3 Year	5 Year	10 Year
Natixis Sustainable Future	7	—	—	—
PIMCO RealPath Blend	43	7	—	—
PIMCO RealPath	70	43	79	82
Principal Lifetime Hybrid	81	62	—	—
Principal LifeTime	70	69	46	33
Prudential Day One Target Date	46	—	—	—
Putnam RetirementReady	67	93	49	42
Schwab Target Index	20	—	—	—
Schwab Target	80	83	46	46
State Street Target Retirement	40	21	—	—
T. Rowe Price Retirement Income	69	—	—	—
T. Rowe Price Retirement	45	16	9	5
T. Rowe Price Target Retire	23	41	29	—
TIAA-CREF Lifecycle Index	18	12	3	—
TIAA-CREF Lifecycle	82	26	18	16
Transamerica ClearTrack	65	74	—	—
USAA Target Retirement Funds	67	55	81	63
Vanguard Target Retirement	35	25	11	26
Voya Index Solution	46	48	30	62
Voya Solution	75	70	30	49
Voya Target Retirement	64	66	40	—
Wells Fargo Dynamic Target	4	2	—	—
Wells Fargo Target	16	55	62	64

Source: Morningstar, Inc. Data as of 12/31/18.

The added insight from reviewing calendar-year ranks reveals that target-date series rarely revel with peer-beating results each calendar year. Exhibit 26 shows the average calendar-year Morningstar Category ranks of a representative share class for each target-date series. (The updated Target-Date Fund Series Report will not show calendar-year Morningstar Category ranks but will provide calendar-year performance versus corresponding Morningstar Category averages and benchmarks.) T. Rowe Price Retirement was the only target-date series that ranked in the top half of the Morningstar Categories, on average, each of the past 10 calendar years.

The calendar-year ranks show that target-date series may still come out ahead over the long run without being at the front of the pack each year — thus, investors don't have to be immediately alarmed with short-term underperformance. For example, the JPMorgan SmartRetirement series beat 90% of peers, on average, over the 10 years through 2018 despite trailing two thirds of peers in three calendar years over that span. Furthermore, that series only ranked in the top decile in three calendar years to achieve its top-decile average rank over the past 10 years.

On the flip side, investors should refrain from becoming overly excited with stellar short-term results. Invesco Balanced-Risk Retirement and PIMCO RealPath each posted top-decile average ranks twice over the past 10 calendar years, but both series lagged more than 80% of peers over the 10-year period. (PIMCO liquidated the latter series in early 2019.)

Exhibit 26 Calendar-Year Average Category Ranks by Target-Date Series (Representative Share Class)

Name	Average Category Rank									
	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
1290 Retirement	5	—	—	—	—	—	—	—	—	—
AllianceBernstein Multi-Manager Select	70	20	25	37	—	—	—	—	—	—
AllianzGI Retirement	99	16	19	50	96	89	78	38	28	27
American Century One Choice	29	83	60	40	3	62	53	5	38	87
American Funds Trgt Date Rtrmt	6	23	34	7	11	1	17	16	77	39
AXA Target Allocation	61	52	37	72	78	18	56	86	82	86
BlackRock LifePath Dynamic	37	14	40	57	34	77	44	13	65	62
BlackRock LifePath Index	32	46	44	17	14	68	46	—	—	—
BlackRock LifePath Smart Beta	76	42	36	66	68	52	48	24	44	60
BMO Target Date Retirement Funds	54	23	48	60	15	—	—	—	—	—
Columbia Adaptive Retirement	15	—	—	—	—	—	—	—	—	—
Dimensional Target Date Retirement Income	63	54	21	—	—	—	—	—	—	—
Fidelity Advisor Freedom	50	21	35	22	45	55	63	61	19	28
Fidelity Flex Freedom	46	—	—	—	—	—	—	—	—	—
Fidelity Freedom Blend	—	—	—	—	—	—	—	—	—	—
Fidelity Freedom Index	20	48	34	34	25	73	86	27	59	—
Fidelity Freedom	65	15	31	11	38	52	58	66	47	41
Fidelity Managed Retirement	29	68	49	17	15	11	15	78	33	33
Fidelity Simplicity RMD	30	67	48	18	22	22	23	75	31	32
Franklin LifeSmart	24	71	95	57	49	26	91	42	17	13
Goldman Sachs Target Date Portfolio	12	96	41	25	3	64	89	6	99	33
Great-West Lifetime Conservative	27	92	27	53	36	86	47	19	68	—
Great-West Lifetime	71	57	13	52	27	32	11	56	32	—
Great-West SecureFoundation Lifetime	62	70	10	40	47	34	48	37	96	—
Guidestone Funds MyDestination	39	45	26	92	87	50	36	24	6	45
Harbor Target Retirement	57	61	73	31	92	70	20	48	53	—
Invesco Balanced-Risk Retirement	57	97	2	90	29	92	88	2	58	76
Invesco Peak Retirement	36	—	—	—	—	—	—	—	—	—
John Hancock Multi-Index Lifetime	57	57	3	62	13	—	—	—	—	—
John Hancock Multi-Index Preservation	12	91	33	49	37	81	78	4	—	—

Source: Morningstar, Inc. Data as of 12/31/18.

Exhibit 26 Calendar-Year Average Category Ranks by Target-Date Series (Representative Share Classes) (Continued)

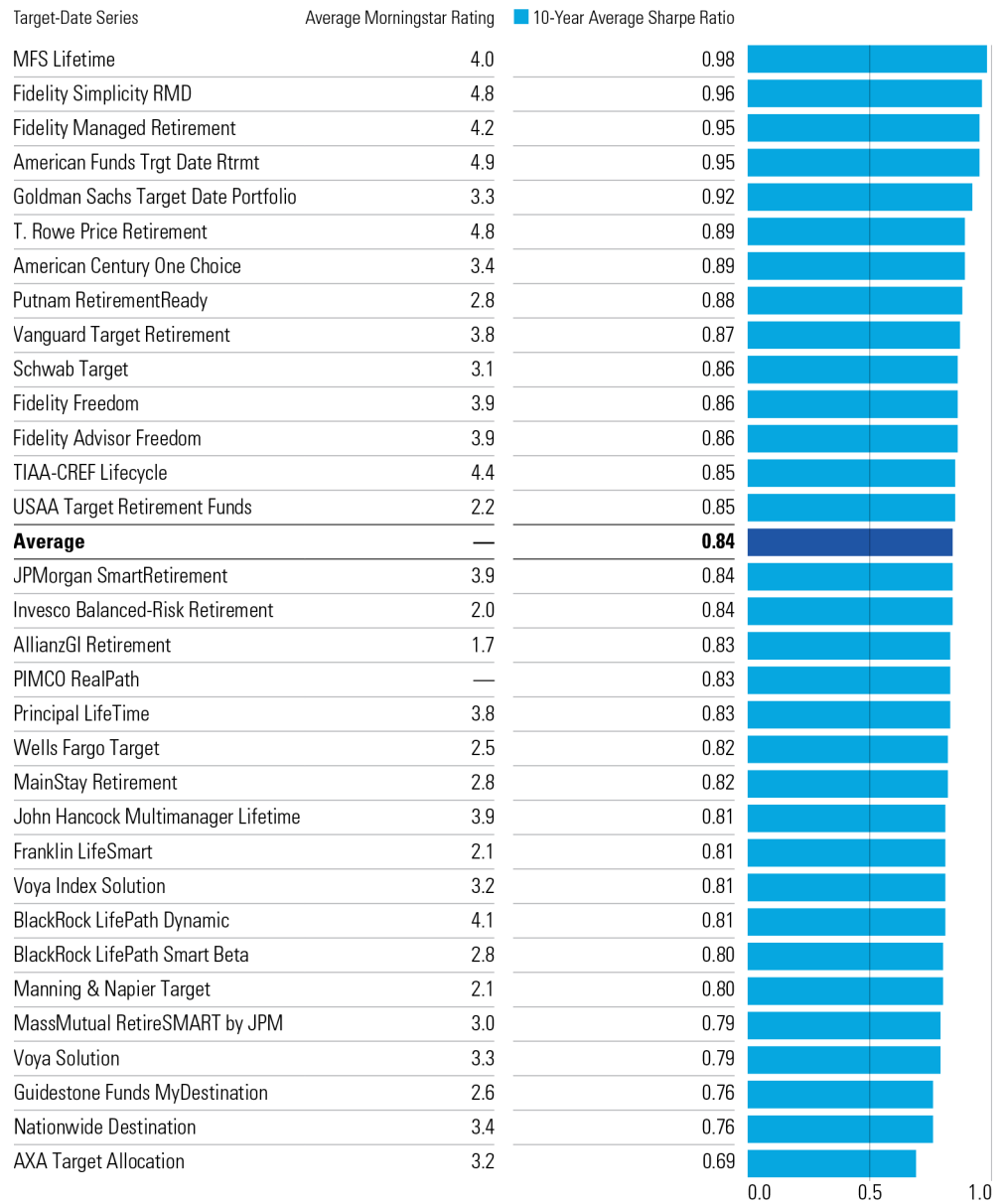
Name	Average Category Rank									
	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
John Hancock Multimanager Lifetime	80	24	18	38	42	18	19	79	12	3
JPMorgan SmartRetirement Blend	55	46	30	27	16	60	—	—	—	—
JPMorgan SmartRetirement	89	15	75	39	7	42	4	66	3	22
KP Retirement Path	20	49	52	17	—	—	—	—	—	—
MainStay Retirement	95	25	81	22	22	5	29	34	49	64
Manning & Napier Target	9	36	94	93	50	22	29	60	48	43
MassMutual RetireSMART by JPM	30	51	61	80	84	18	21	58	21	19
MassMutual Select TRP Retirement	—	—	—	—	—	—	—	—	—	—
MFS Lifetime	32	51	26	10	74	28	21	36	7	19
Nationwide Destination	69	77	9	40	61	23	35	57	27	73
Natixis Sustainable Future	7	—	—	—	—	—	—	—	—	—
PIMCO RealPath Blend	43	53	4	90	—	—	—	—	—	—
PIMCO RealPath	70	67	8	95	63	93	76	9	70	35
Principal Lifetime Hybrid	81	56	30	11	—	—	—	—	—	—
Principal LifeTime	70	18	83	31	28	37	11	38	11	54
Prudential Day One Target Date	46	64	—	—	—	—	—	—	—	—
Putnam RetirementReady	67	82	82	12	7	34	42	49	76	24
Schwab Target Index	20	69	—	—	—	—	—	—	—	—
Schwab Target	80	34	85	7	23	18	32	15	48	74
State Street Target Retirement	40	33	24	62	—	—	—	—	—	—
T. Rowe Price Retirement Income	69	—	—	—	—	—	—	—	—	—
T. Rowe Price Retirement	45	11	40	9	27	9	4	42	9	6
T. Rowe Price Target Retire	23	53	53	9	40	—	—	—	—	—
TIAA-CREF Lifecycle Index	18	32	29	15	12	19	37	8	59	—
TIAA-CREF Lifecycle	82	2	44	3	56	8	5	36	26	72
Transamerica ClearTrack	65	71	56	—	—	—	—	—	—	—
USAA Target Retirement Funds	67	72	18	81	90	75	59	43	14	29
Vanguard Target Retirement	35	37	31	35	9	25	42	17	35	76
Voya Index Solution	46	53	42	33	25	32	36	34	73	89
Voya Solution	75	25	77	7	18	40	38	70	32	60
Voya Target Retirement	64	46	66	21	28	40	—	—	—	—
Wells Fargo Dynamic Target	4	20	52	—	—	—	—	—	—	—
Wells Fargo Target	16	88	49	56	54	70	79	22	37	65

Source: Morningstar, Inc. Data as of 12/31/18.

While insightful, ranking returns within peer groups overlooks risk. The updated Target-Date Fund Series Report incorporates the Morningstar Rating and 10-year Sharpe ratio into the Performance section. Both measures seek to provide further insight by accounting for the volatility of returns, with the Morningstar Rating emphasizing downside variations and weighting across the three-, five-, and 10-year periods as available. Exhibit 27 shows the average Morningstar Rating and 10-year Sharpe ratio for each series' representative share class.

Some top-returning target-date series also delivered on a risk-adjusted basis. The American Funds Target Date Retirement, T. Rowe Price Retirement, and MFS Lifetime series each posted among the highest average Sharpe ratios over the past 10 years while maintaining an average Morningstar Rating of 4 stars or higher. Meanwhile, a few series with higher-than-average Sharpe ratios have less impressive average Morningstar Ratings, such as Goldman Sachs Target Date Portfolio, Putnam RetirementReady, and USAA Target Retirement. This combination suggests those series experienced more downside volatility or their risk/return standing deteriorated in recent years. Peering through various lenses, investors may determine how a target-date series has fared on a risk-adjusted basis.

Exhibit 27 Average Morningstar Rating and 10-Year Sharpe Ratio by Target-Date Series
(Representative Share Class)



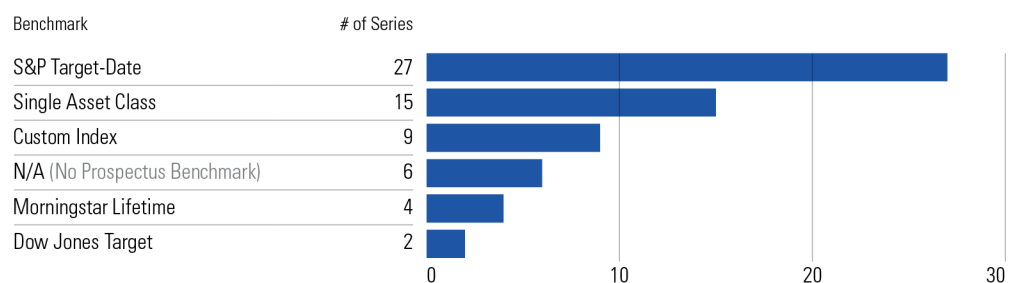
Source: Morningstar, Inc. Data as of 12/31/18.

Setting the Benchmark

Identifying a suitable benchmark for target-date funds has remained a conundrum since their advent. While the complicating issues remain, the S&P Target-Date Indexes have emerged as the most popular benchmark among target-date providers. Exhibit 28 displays the indexes that firms have designated as their primary benchmark in the prospectuses of target-date funds. Twenty-seven of the 63 series designated a version of the S&P Target-Date Indexes as their primary benchmark. Single asset-class benchmarks, such as the S&P 500, came in a distant second with 15 providers. However, they don't

serve as a viable benchmark for the diversified approach underpinning target-date funds. In accordance with target-date providers' preferred benchmark, the updated Target-Date Funds Series Reports will include the S&P Target-Date Indexes for comparative purposes.

Exhibit 28 Count of Target-Date Series' Primary Prospectus Benchmarks



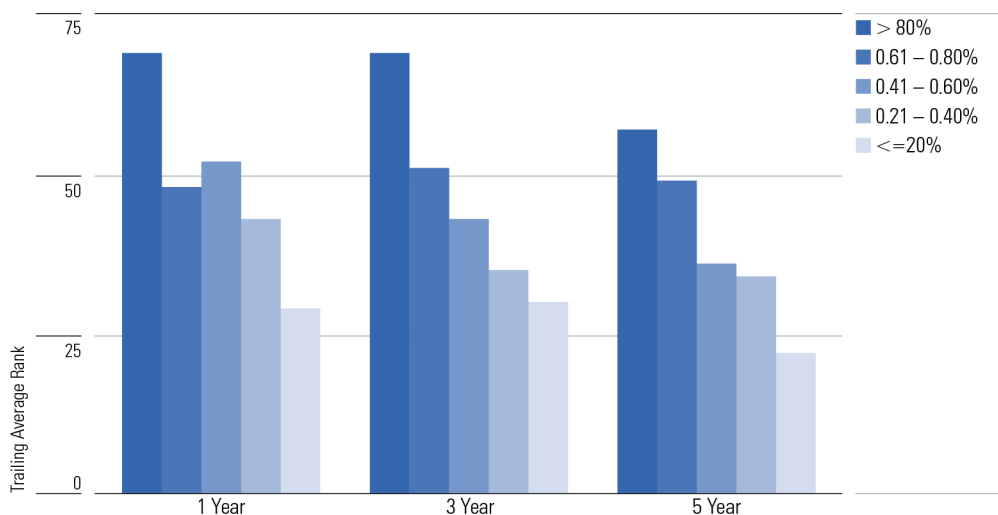
Source: Morningstar, Inc. Data as of 12/31/18.

The Low-Fee Advantage

As highlighted in this report's Assets, Flows, and the Competitive Landscape section, the target-date funds' asset flows have gone overwhelmingly to low-cost offerings in recent years, and investors in low-cost funds have been generally rewarded with peer-beating results over the past five years. Exhibit 29 displays the average Morningstar Category rank by current expense ratios over trailing one-, three-, and five-year periods using the same representative share class for funds mentioned throughout this section. Notably, these findings have a survivorship bias, as obsolete funds do not have trailing returns through 2018.

The lowest-cost funds did best over the one-year period, which has the least survivorship bias, as funds with expense ratios less than or equal to 0.20% topped more than 70% of peers on average. Bucking the trend of lower fees uniformly translating to better results, higher-priced funds with expense ratios greater than 0.60% and less than or equal to 0.80% generally fared slightly better than the group of peers 20 basis points cheaper. Top-decile results from funds in the 1290 Retirement and Natixis Sustainable Futures series contributed to the result despite their elevated fees.

Looking back further, the lowest-cost funds also posted the best average rank over the three- and five-year periods. Strong showings from TIAA-CREF Lifecycle Index, Vanguard Target Retirement, BlackRock LifePath Index, and Fidelity Freedom Index—each invests predominantly in index funds—over both trailing periods lifted the ranks for the lowest-cost funds. Notably, funds with expense ratios greater than 0.20% but less than or equal to 0.40% generally fared about the same as the funds 20 basis points more expensive over the five-year period through 2018. Across all trailing periods, funds with expense ratios greater than 0.80% generally failed to generate peer-beating results.

Exhibit 29 Target-Date Funds' Trailing Average Rank by Expense Ratio (Representative Share Class)

Source: Morningstar, Inc. Data as of 12/31/18.

Low Fees Don't Guarantee Superior Results

Multiple target-date providers have launched lower-cost versions of a legacy series, and in many instances those lower-cost versions have posted better results, but they don't always come out ahead. Exhibit 30 compares the performance of a common share class of nine target-date providers' newer, lower-cost series against the legacy series since the inception of the former. The comparison focuses on series that share similar glide paths to isolate the benefit of lower fees. On average, the expense ratios for the lower-cost series were 32 basis points lower than the legacy ones, creating a meaningful head start for performance.

Of the 10 target-date series with lower fees, the since-inception returns for three failed to keep pace with their legacy series. Despite an average fee advantage of 50 basis points, the Fidelity Freedom Index series lagged the Fidelity Freedom series by roughly 38 basis points annually, on average, since the former's 2009 inception through 2018 while posting a similar Sharpe ratio over that period. The Fidelity Freedom series uses underlying active strategies and tactical asset allocation in attempt to augment returns. Similarly, JPMorgan SmartRetirement Blend, which launched in 2012 with more exposure to index funds than the legacy series, trailed JPMorgan SmartRetirement series by an average of 31 basis points annually over the common period. TIAA-CREF Lifecycle Index still slightly lagged TIAA-CREF Lifecycle but made a big stride to close the gap in 2018 when it outperformed the legacy series significantly.

In most cases, the lower-cost target-date series have fared better than the legacy ones. In these instances, investors can justifiably assume that the legacy series' actively managed underlying funds failed to outperform, though tactical asset allocation and differences in sub-asset-class exposure may also contribute to the divergence in results. Three lower-cost series—PIMCO RealPath Blend, Schwab

Target Index, and Principal Lifetime Hybrid — beat their legacy counterpart by more than 50 basis points annually since their respective inception dates through 2018.

Exhibit 30 Since-Inception Performance Comparison of a Firm's Lower-Cost Target-Date Series vs. Legacy Series

Lower-Cost Series	Inception Date	Legacy Series	Comparison Share Class	Average Excess Since Lower-Cost Series' Inception (Lower-Cost—Legacy)			
				Annualized Return	Sharpe Ratio	Maximum Drawdown	Current Expense Ratio
Voya Index Solution	3/10/08	Voya Solution	I	0.23	0.06	4.34	-0.40
TIAA-CREF Lifecycle Index	9/30/09	TIAA-CREF Lifecycle	Inst	-0.03	0.05	1.68	-0.31
Fidelity Freedom Index	10/2/09	Fidelity Freedom	Investor	-0.38	0.02	2.09	-0.50
BlackRock LifePath Index	5/31/11	BlackRock LifePath Dynamic	K	0.32	0.04	0.13	-0.38
BlackRock LifePath Index	5/31/11	BlackRock LifePath Smart Beta	K	0.48	0.08	1.53	-0.12
JPMorgan SmartRetirement Blend	7/2/12	JPMorgan SmartRetirement	I	-0.31	-0.01	1.29	-0.15
John Hancock Multi-Index Lifetime	11/7/13	John Hancock Multimanager Lifetime	R6	0.26	0.03	0.86	-0.19
Principal Lifetime Hybrid	9/30/14	Principal LifeTime	Inst	0.55	0.07	0.00	-0.25
PIMCO RealPath Blend	12/31/14	PIMCO RealPath	Inst	1.03	0.14	3.01	-0.43
Schwab Target Index	8/25/16	Schwab Target	—	0.57	0.10	1.95	-0.50

Source: Morningstar, Inc. Data as of 12/31/18.

Uncovering the Drivers of Results

Target-date funds' shifting asset allocation, multi-asset exposure, additional layer of underlying funds, and benchmarking issues complicate identifying drivers of results. The updated Target-Date Fund Series Reports will attempt to shed light on a target-date fund's recent performance with a revised attribution methodology. While the revised attribution methodology doesn't serve as panacea to the complications associated with evaluating performance for target-date funds, it should help investors understand the main performance drivers.

First off, the revised attribution methodology seeks to quantify how asset allocation has affected results by calculating an allocation effect. The methodology drills down to a target-date fund's underlying securities, groups the exposures into 10 subasset classes, and then compares the weightings of each subasset class to the peer average. A fund may be overweight or underweight in a subasset class relative to the peer average. An index serves as a proxy for each subasset class to determine if that relative position helped or hurt performance. An overweight in a strong-performing subasset class or an underweight in a poor-performing one shows positive, whereas an underweight to a strong-performing subasset class or an overweight to a poor-performing one shows negative. This process repeats each month and then links the monthly results to arrive at a one-year allocation effect while identifying the allocation effect for each subasset class.

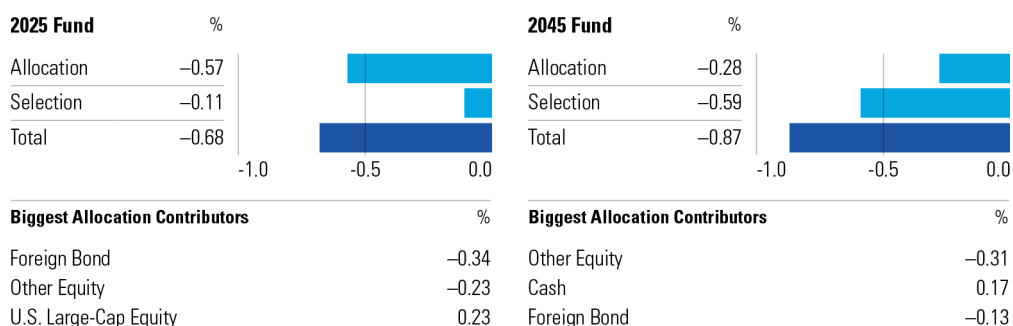
Since the allocation effect assumes the target-date fund delivered the index return for each subasset class, it doesn't capture any outperformance or underperformance within the subasset classes. The selection effect reflects the difference in returns between a fund and the peer average that's not attributable to the allocation effect. The methodology uses a representative share class for a fund to

calculate the selection effect. Unlike the allocation effect, the methodology does not calculate the selection effect for each subasset class because returns are not available for a fund's subasset classes.

Investors should be aware of a few subtleties when viewing the attribution. The allocation effect does not discern between a fund's long-term strategic allocations and tactical shifts that the managers may have in place over the shorter term. The selection effect has the potential to reflect a mismatch in exposures within the subasset classes. For example, if a series' foreign bond exposure is emerging-markets debt exclusively, it would not align with the broad index used as a proxy for foreign bonds. Lastly, the results will be shown versus the peer average sub-asset-class portfolio, not a publicly available benchmark.

Exhibit 31 shows an example of the output that will be displayed in the updated Target-Date Fund Series Report. Rather than aggregate the effects to the series, the series report will feature results for the 2025 and 2045 funds, representing two points on the glide path. The results will be over the one-year period to provide insight on recent performance. The exhibit will also show the three largest contributors to the allocation effect over the period.

Exhibit 31 One-Year Performance Attribution Example



Source: Morningstar, Inc.

Price

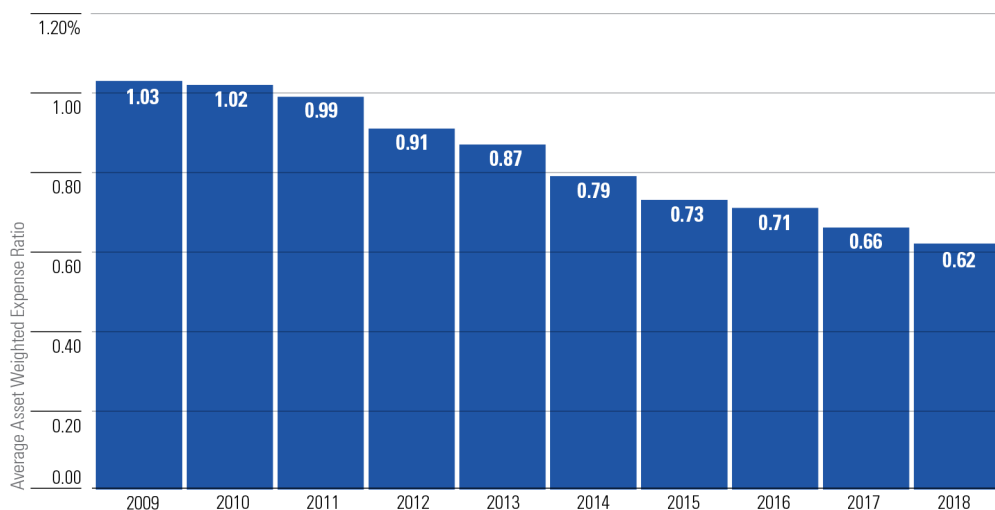
With low-cost options capturing the bulk of assets flowing into target-date strategies over the past few years, plan sponsors' and investors appear to crave the cheapest offerings. This section discusses the current state of pricing for target-date funds while highlighting some of the new fee-related data coming soon to the Target-Date Fund Series Reports.

Another Year of Declining Target-Date Fund Fees

The average fee for target-date funds fell to a historic low of 0.62% in 2018, down from 0.66% in 2017. This figure represents an equal-weighted average of all 63 target-date series' asset-weighted prospectus net expense ratios. Target-date funds commonly have many share classes with different fees; a series' asset-weighted average expense ratio reflects what investors in that series pay on average.

The decline in 2018 continues a trend. As seen in Exhibit 32, target-date fund fees have consistently fallen over the past decade, with year-over-year declines ranging from 1 to 8 basis points. This persistent decline stems from fee cuts on existing target-date series, the introduction of lower-cost series, the liquidation of higher-priced series, and investors' migration into a series' lower-cost share classes. Assets moving to lower-cost share classes was the primary driver for the decline in 2018, followed by small fee reductions in some series.

Exhibit 32 Target-Date Funds' Average Asset-Weighted Expense Ratio, 2009-18



Source: Morningstar, Inc. Data as of 12/31/18.

The asset-weighted expense ratio declined at 31 of the 63 target-date fund series in 2018, as shown in Exhibit 33. Wells Fargo Dynamic Target saw the biggest drop of 36 basis points, as it replaced the series' underlying holdings with passively managed funds, trimmed its management fee, and applied fee waivers. Faith-based Guidestone saw the second-largest decline of 30 basis points thanks to fee cuts and higher flows into lower-cost share classes. Voya Target Retirement's asset-weighted expense ratio fell 24 basis points because of a change in its fee structure, and Goldman Sachs Target Date Portfolio's fell 0.19% after the firm brought management of the series in-house and streamlined its underlying lineup of passive holdings.

A few target-date series saw their asset-weighted expense ratios rise in 2018, but that typically did not reflect rising fees. PIMCO RealPath saw the largest increase in 2018, but PIMCO liquidated the series in February 2019. Some series, such as Manning & Napier Target and BlackRock LifePath Index, saw an increase in asset-weighted expense ratios that stemmed from higher net flows into share classes with higher expense ratios. For BlackRock, the firm took over some of State Farm's retirement assets in 2018 and placed them into a new P share class of its BlackRock LifePath Index series, which has a 0.41% expense ratio compared with 0.11% for the series' K share class.

The asset-weighted expense ratios didn't change much for the largest target-date series. The Vanguard Target Retirement and American Funds Target Date Retirement exhibited small declines as expense ratios for underlying fund holdings fell. Flows to lower-cost share classes drove a decline in the asset-weighted expense ratio for Fidelity Freedom, T. Rowe Price Retirement, JPMorgan SmartRetirement, and TIAA-CREF Lifecycle. In 2018, Fidelity Freedom Index cut fees for its Investor share class by 1 basis point to 0.14% and for its Institutional share class by 2 basis points to 0.08%. That series' asset-weighted average expense ratio of 0.11% was among the lowest for a target-date series.

Exhibit 33 Target-Date Series' Expense Ratio and Market Share

Target-Date Series	Weighted Average Expense Ratio %			Market Share %	
	2018	2017	2017 to 2018 Change (basis points)	2018	2017
Wells Fargo Dynamic Target	0.29	0.65	-0.36	0.0	0.0
Guidestone Funds MyDestination	0.69	0.99	-0.30	0.3	0.3
Voya Target Retirement	0.51	0.75	-0.24	0.0	0.0
Goldman Sachs Target Date Portfolio	0.29	0.48	-0.19	0.0	0.0
BMO Target Date Retirement Funds	0.66	0.76	-0.10	0.0	0.0
Franklin LifeSmart	0.96	1.05	-0.09	0.0	0.1
Voya Index Solution	0.39	0.45	-0.06	0.4	0.3
Fidelity Freedom	0.62	0.66	-0.05	15.4	16.7
American Funds Trgt Date Rtrmt	0.63	0.67	-0.04	9.6	8.0
MFS Lifetime	0.83	0.87	-0.04	0.3	0.3
Great-West Lifetime Conservative	0.93	0.97	-0.04	0.0	0.1
State Street Target Retirement	0.09	0.13	-0.04	0.5	0.4
T. Rowe Price Retirement	0.69	0.73	-0.04	12.9	14.7
Great-West SecureFoundation Lifetime	0.66	0.70	-0.04	0.0	0.1
Great-West Lifetime	0.97	1.01	-0.04	0.5	0.6
MassMutual RetireSMART by JPM	0.95	0.98	-0.04	0.2	0.2
T. Rowe Price Target Retire	0.66	0.69	-0.03	0.2	0.3
Putnam RetirementReady	0.96	0.99	-0.03	0.1	0.1
KP Retirement Path	0.41	0.44	-0.02	0.7	0.6
JPMorgan SmartRetirement	0.66	0.68	-0.02	4.1	4.1
MainStay Retirement	0.84	0.86	-0.02	0.1	0.1
AllianzGI Retirement	0.66	0.68	-0.02	0.0	0.0
Principal LifeTime	0.80	0.82	-0.02	1.8	2.3
Fidelity Advisor Freedom	0.90	0.91	-0.02	1.5	1.7
Fidelity Freedom Index	0.11	0.12	-0.02	2.5	2.2
TIAA-CREF Lifecycle Index	0.15	0.17	-0.01	1.5	1.1
American Century One Choice	0.79	0.80	-0.01	1.4	1.7
TIAA-CREF Lifecycle	0.50	0.51	-0.01	2.7	2.7
Voya Solution	1.05	1.06	-0.01	0.3	0.3
Principal Lifetime Hybrid	0.46	0.47	-0.01	0.1	0.1
Vanguard Target Retirement	0.12	0.13	-0.01	36.5	34.4
John Hancock Multimanager Lifetime	0.68	0.68	0.00	0.6	0.7
John Hancock Multi-Index Lifetime	0.41	0.42	0.00	0.1	0.1
ClearTrack	1.19	1.19	0.00	0.0	0.1
John Hancock Multi-Index Preservation	0.41	0.41	0.00	0.6	0.7
1290 Retirement	0.65	0.65	0.00	0.0	0.0
Columbia Adaptive Retirement	0.59	0.59	0.00	0.0	0.0
Dimensional Target Date Retirement Income	0.26	0.26	0.00	0.1	0.1
Fidelity Flex Freedom	0.00	0.00	0.00	0.0	0.0
Natixis Sustainable Future	0.65	0.65	0.00	0.0	0.0

Source: Morningstar, Inc. Data as of 12/31/18.

Exhibit 33 Target-Date Series' Expense Ratio and Market Share (Continued)

Target-Date Series	Weighted Average Expense Ratio %			Market Share %	
	2018	2017	2017 to 2018 Change (basis points)	2018	2017
Schwab Target Index	0.08	0.08	0.00	0.1	0.0
Fidelity Freedom Blend	0.44	—	—	0.0	—
Fidelity Managed Retirement	0.60	—	—	0.0	—
Fidelity Simplicity RMD	0.56	—	—	0.0	—
Invesco Peak Retirement	0.73	—	—	0.0	—
MassMutual Select TRP Retirement	0.74	—	—	0.3	—
T. Rowe Price Retirement Income	0.71	—	—	0.0	—
JPMorgan SmartRetirement Blend	0.33	0.32	0.00	0.5	0.7
Nationwide Target Destination	0.74	0.74	0.00	0.1	0.2
Schwab Target	0.57	0.57	0.00	0.3	0.4
Harbor Target Retirement	0.71	0.70	0.01	0.0	0.0
Prudential Day One	0.48	0.47	0.01	0.0	0.0
USAA Target Retirement Funds	0.77	0.76	0.01	0.4	0.4
AXA Target Allocation	1.03	1.02	0.01	0.0	0.0
Wells Fargo Target	0.41	0.38	0.03	0.3	0.5
Invesco Balanced-Risk Retirement	1.19	1.15	0.04	0.0	0.0
BlackRock LifePath Smart Beta	0.64	0.60	0.04	0.0	0.0
BlackRock LifePath Index	0.19	0.14	0.05	2.5	1.5
BlackRock LifePath Dynamic	0.86	0.81	0.05	0.1	0.1
PIMCO RealPath Blend	0.44	0.38	0.06	0.0	0.0
AB Multi-Manager Select	0.91	0.84	0.07	0.1	0.1
Manning & Napier Target	1.03	0.96	0.08	0.1	0.1
PIMCO RealPath	0.86	0.74	0.12	0.0	0.0

Source: Morningstar, Inc. Data as of 12/31/18.

Putting Fees in Proper Context

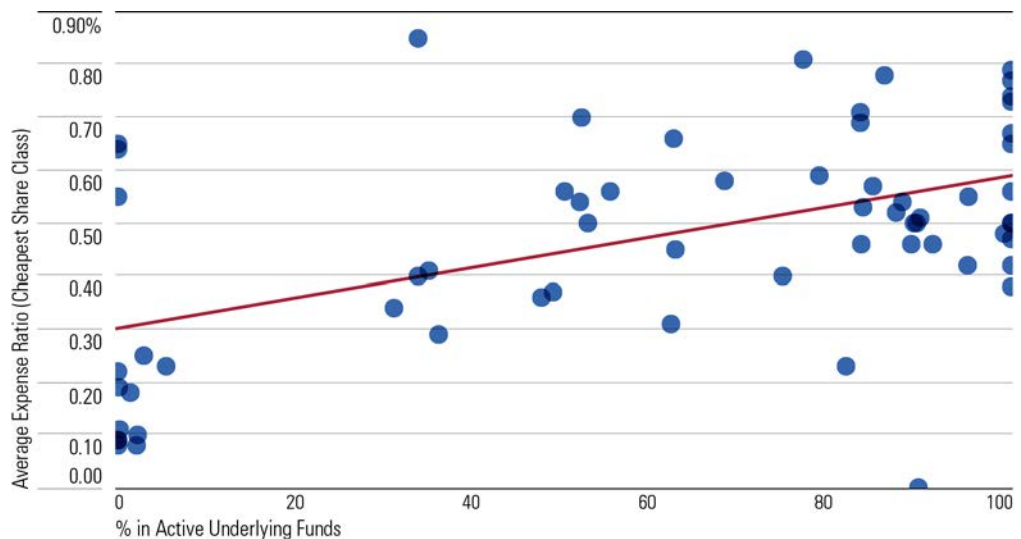
A look at a target-date series' approach to underlying funds helps investors gauge the appropriateness of its fees. Often, the cost of a target-date series' underlying funds—labeled as acquired fund fees in prospectuses—drives its fees, though additional operating fees, management fees, and marketing expenses may also come into play. The decision to use actively or passively managed strategies to gain exposure to desired asset classes directly affects a target-date series' cost, as active strategies generally come with higher expense ratios than passive ones. Exhibit 34 shows the relationship between the average expense ratio of a target-date series' lowest-cost share class and its asset-weighted exposure to actively managed underlying holdings. (This exhibit will be presented in the updated Target-Date Fund Series Reports.) Exhibit 35 lists the coordinates for each series included in Exhibit 34.

Investors can choose from multiple target-date series that invest predominantly in index funds. A cluster of the six low-cost series that stick to index funds had average expense ratios between 0.08% and 0.11% for their cheapest share class. That cluster included Schwab Target Index, Fidelity Freedom Index, State Street Target Retirement, Vanguard Target Retirement, TIAA-CREF Lifecycle Index, and BlackRock

LifePath Index. A few series that also hold index funds came in at a slightly higher price point, and that owes to having holdings that track strategic-beta indexes with a factor tilt, such as valuations or price momentum, instead of traditional market-cap-weighted indexes. This included Wells Fargo Target, Wells Fargo Dynamic Target, BlackRock LifePath Smart Beta, and Goldman Sachs Target Date Portfolio.

As expected, target-date series' expense ratios increase with the amount they hold in active funds. As seen in Exhibit 34, the cheapest share class for series that invest completely in active funds was generally just shy of 0.60%, though there was a wide dispersion. Meanwhile, the number of target-date series that fall between the extremes of investing predominantly in either active or passive strategies has increased. Several target-date series that have historically held actively managed strategies have inserted or relied more heavily on passive funds, and other series explicitly aim to blend active and passive funds, such as JPMorgan SmartRetirement Blend and the newly launched Fidelity Freedom Blend. Exhibit 34 illustrates the competitiveness of these series' fees considering the amount in active strategies.

Exhibit 34 Target-Date Series' Average Expense Ratio of the Cheapest Share Class versus Percentage in Actively Managed Underlying Funds



Source: Morningstar, Inc. Data as of 12/31/18.

Exhibit 35 Target-Date Series' Average Expense Ratio of the Cheapest Share Class versus Percentage in Actively Managed Underlying Funds

Name	Active (%)	Average Expense Ratio (Cheapest Share Class) (%)	Name	Active (%)	Average Expense Ratio (Cheapest Share Class) (%)
1290 Retirement	0.0	0.65	MainStay Retirement	51.9	0.70
AllianceBernstein Multi-Mgr Select	62.2	0.66	Manning & Napier Target	100.0	0.73
AllianzGI Retirement	95.2	0.55	MassMutual RetireSMART by JPM	87.8	0.54
American Century One Choice	100.0	0.50	MassMutual Select TRP Retirement	89.1	0.50
American Funds Trgt Date Rtrmt	100.0	0.38	MFS Lifetime	100.0	0.47
AXA Target Allocation	33.6	0.85	Nationwide Destination	34.8	0.41
BlackRock LifePath Dynamic	89.4	0.50	Natixis Sustainable Future	100.0	0.65
BlackRock LifePath Index	0.2	0.11	PIMCO RealPath Blend	30.9	0.34
BlackRock LifePath Smart Beta	5.4	0.23	PIMCO RealPath	100.0	0.77
BMO Target Date Retirement Funds	84.5	0.57	Principal Lifetime Hybrid	33.6	0.40
ClearTrack	0.0	0.55	Principal LifeTime	83.1	0.69
Columbia Adaptive Retirement	100.0	0.50	Prudential Day One Target Date	74.4	0.40
Dimensional Target Date Ret. Income	81.5	0.23	Putnam RetirementReady	100.0	0.67
Fidelity Advisor Freedom	91.2	0.46	Schwab Target Index	2.1	0.08
Fidelity Flex Freedom	89.6	0.00	Schwab Target	67.9	0.58
Fidelity Freedom Blend	61.9	0.31	State Street Target Retirement	0.0	0.09
Fidelity Freedom Index	0.0	0.08	T. Rowe Price Retirement Income	83.1	0.71
Fidelity Freedom	88.8	0.46	T. Rowe Price Retirement	87.1	0.52
Fidelity Managed Retirement	83.2	0.46	T. Rowe Price Target Retire	89.8	0.51
Fidelity Simplicity RMD	83.4	0.53	TIAA-CREF Lifecycle Index	2.2	0.10
Franklin LifeSmart	78.5	0.59	TIAA-CREF Lifecycle	100.0	0.42
Goldman Sachs Target Date Portfolio	2.9	0.25	USAA Target Retirement Funds	85.8	0.78
Great-West Lifetime Conservative	51.7	0.54	Vanguard Target Retirement	0.0	0.09
Great-West Lifetime	50.0	0.56	Voya Index Solution	1.4	0.18
Great-West SecureFoundation Lifetime	0.0	0.64	Voya Solution	76.7	0.81
Guidestone Funds MyDestination	52.6	0.50	Voya Target Retirement	62.4	0.45
Harbor Target Retirement	100.0	0.74	Wells Fargo Dynamic Target	0.0	0.22
Invesco Balanced-Risk Retirement	100.0	0.79	Wells Fargo Target	0.1	0.19
Invesco Peak Retirement	55.1	0.56			
John Hancock Multi-Index Lifetime	48.7	0.37			
John Hancock Multi-Index Preservation	47.4	0.36			
John Hancock Multimanager Lifetime	100.0	0.56			
JPMorgan SmartRetirement Blend	35.9	0.29			
JPMorgan SmartRetirement	99.2	0.48			
KP Retirement Path	95.1	0.42			

Source: Morningstar, Inc. Data as of 12/31/18.

Collective Investment Trusts: A Path to Lower Costs for Some

Collective investment trusts have gained traction in the target-date fund landscape because they often apply the same or similar strategy as a mutual fund at a lower cost to investors, and the cost savings may be material. For example, the average expense for T. Rowe Price Retirement's lowest-cost share class was 0.52%, whereas investors may get the CIT that follows the same strategy for as low as 0.32%. Similarly, JPMorgan offers CITs that appear as clones of their SmartRetirement and SmartRetirement Blend series with lower expense ratios, 10 basis points and 8 basis points,

respectively. Still, the availability of CITs and their share classes often the depends on a retirement plan's size, and plan sponsors must gain comfort with less transparency compared with mutual funds. Furthermore, CITs are only available to qualified retirement plans, limiting their reach.

Parent

Target-date strategies are designed to be multidecade holdings for investors. Thus, investors stand to benefit from partnering with firms that have a long-term commitment to supporting their target-date strategies and a track record of treating shareholders well. This section provides an overview of the firms that offer target-date strategies, highlighting which firms have become larger players and instances where the target-date funds' portion of assets could be expected to capture a firm's attention.

It's Vanguard's World ...

Vanguard's low-cost target-date strategies have garnered a heaping portion of investors' cash. Exhibit 36 shows the annual estimated net flows to target-date series of the 20 largest target-date providers for each calendar year from 2009 through 2018, making it clear which providers are gaining or losing ground. In each of those 10 calendar years, Vanguard's target-date series took in the most money. Furthermore, Vanguard has taken in more target-date cash than the rest of the top 20 combined in each of the past four years. Taken together with market appreciation, this has propelled Vanguard's growth: From the beginning of 2009 through the end of 2018, Vanguard's target-date fund assets jumped nearly dozen-fold to \$396 billion. Fidelity was the largest provider at the start of the period and saw its target-date fund assets more than triple during that span, yet it couldn't keep pace with Vanguard's prodigious growth. By year-end 2018, Vanguard claimed nearly twice as much target-date fund market share as Fidelity. The updated Target-Date Fund Series Reports will display the calendar-year assets and estimated net flows for the corresponding provider.

While Vanguard, Fidelity, and T. Rowe Price have collectively dominated the target-date fund market share for years, American Funds has emerged as another leading provider. Over the past decade, American Funds' target-date series, which launched years after the three leading providers in 2007, garnered an estimated \$85 billion in net inflows over the past decade—more than Fidelity and T. Rowe Price combined. Fidelity and T. Rowe Price each saw net outflows from their target-date mutual funds in both 2017 and 2018, though a sizable chunk of that money shifted to the firms' respective target-date CITs.

Exhibit 36 Calendar-Year Estimated Net Flows to Target-Date Mutual Funds of Top 20 Target-Date Providers (USD Mil)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Vanguard	13,019	13,961	12,949	19,564	18,096	14,672	36,695	37,037	50,617	40,788
Fidelity Investments	10,007	11,414	8,672	10,671	3,004	-7,773	-4,616	-2,817	-473	-1,168
T. Rowe Price	6,766	6,400	8,162	7,074	7,898	14,418	10,701	5,450	-9,546	-13,457
American Funds	1,963	1,803	1,419	1,553	2,329	7,564	7,477	15,820	24,115	21,187
JPMorgan	339	1,273	2,417	2,766	7,315	7,970	9,667	4,626	673	1,198
TIAA Investments	1,493	1,980	2,127	2,514	2,724	3,052	3,249	4,104	6,075	4,952
BlackRock	493	755	-262	513	880	426	913	3,154	4,562	3,919
Principal Funds	1,996	752	551	1,386	879	-354	989	-497	-3,504	-3,212
American Century Investments	1,026	966	998	1,492	2,463	1,651	2,334	1,383	-363	-2,850
John Hancock	936	967	1,586	2,623	1,681	1,082	701	-250	-1,467	-977
KP Funds	—	—	—	—	—	4,004	427	521	676	1,414
Voya	792	391	55	60	-431	-653	-462	41	749	360
Great West Funds	161	903	828	1,400	992	478	332	-100	-191	-881
MassMutual	-319	-120	-12	35	11	429	317	-38	-237	3,853
State Street Global Advisors	—	—	—	—	—	19	210	996	2,736	1,611
Schwab	168	209	191	158	439	327	273	62	403	484
USAA	532	736	684	320	236	120	-112	-156	36	-18
GuideStone Funds	104	56	119	177	263	228	194	235	307	300
Wells Fargo Funds	2,863	2,066	1,540	1,749	523	403	-1,450	-6,064	-4,652	-2,313
MFS	59	89	96	250	568	261	213	343	-155	192

Source: Morningstar, Inc. Data as of 12/31/18.

Where Target-Date Carries the Most Weight

Target-date funds' centrality to a firm depends on the firm's background, capabilities, and outlook. While assets and flows don't tell the whole story, target-date funds are more likely to hold a firm's attention when they represent a sizable amount of assets or recent funds flows. Of the 39 firms that offered a target-date fund series at year-end 2018, 17 had at least 5% of their mutual fund assets in target-date funds, as shown in Exhibit 37. The list includes firms with hundreds of billions or even trillions of dollars in assets, such as Vanguard, American Funds, and JPMorgan, as well as smaller firms such as Great West Funds.

Target-date funds' rising popularity has led some entities, like Kaiser Permanente's retirement plan, to create their own target-date series, which it offers under the KP brand. KP has become the 11th-largest target-date provider despite its relatively small asset base, while much larger firms like Schwab and USAA had fewer assets in target-date funds. Target-date funds have clearly become vital to some midsize firms, such as TIAA Investments. ■■■

Exhibit 37 Firms With More Than 5% of Assets in Target-Date Funds

Firm	Assets in Target-Date Funds (USD Mil)	Firm Assets (USD Mil)	Percent of Firm Assets Target-Date Funds (%)
KP Funds	7,759	6,976	111.2
Great West Funds	6,086	16,050	37.9
TIAA Investments	45,128	125,301	36.0
State Street Global Advisors	5,596	19,848	28.2
GuideStone Funds	3,093	11,342	27.3
T. Rowe Price	142,336	550,150	25.9
MassMutual	5,870	27,767	21.1
Principal	20,830	117,948	17.7
JPMorgan	50,279	289,709	17.4
American Century Investments	15,179	97,274	15.6
Fidelity Investments	210,737	1,414,553	14.9
John Hancock	14,945	121,260	12.3
BlackRock	28,068	260,999	10.8
Vanguard	396,175	4,208,016	9.4
Voya	6,828	73,276	9.3
American Funds	104,365	1,439,804	7.2
USAA	4,159	63,577	6.5

Source: Morningstar, Inc. Data as of 12/31/18. Morningstar's asset data excludes firms' fund-of-funds' assets to avoid double-counting. This also results in firm total asset levels that omit assets invested in nonproprietary funds. As a result, KP Funds, which only offers target-date mutual funds and has significant investments in nonproprietary funds, shows that its target-date funds make up more than 100% of the firm's total assets under management. Assets include mutual fund assets and exchange-traded assets, where applicable.

Appendix

Appendix 1 Morningstar Analyst Ratings for Target-Date Fund Series

Target-Date Series Name	Morningstar Analyst Rating	Pillars (+ Positive ● Neutral - Negative)				
		Process	People	Performance	Price	Parent
American Century One Choice	Neutral	●	●	+	●	●
American Funds Trgt Date Rtrmt	Silver	●	+	+	+	+
BlackRock LifePath Dynamic	Bronze	+	+	●	●	+
BlackRock LifePath Index	Gold	+	+	+	+	+
BlackRock LifePath Smart Beta	Bronze	●	+	●	+	+
Fidelity Advisor Freedom	Bronze	+	+	●	●	+
Fidelity Freedom	Silver	+	+	●	●	+
Fidelity Freedom Index	Bronze	●	+	+	+	+
John Hancock Multi-Index Lifetime	Neutral	●	●	●	+	+
John Hancock Multi-Index Preservation	Neutral	●	●	●	+	+
John Hancock Multimanager Lifetime	Neutral	●	+	●	●	+
JPMorgan SmartRetirement	Gold	+	+	+	●	+
JPMorgan SmartRetirement Blend	Gold	+	+	+	+	+
Manning & Napier Target	Bronze	+	+	●	●	●
MassMutual RetireSMART by JPM	Neutral	●	+	●	-	●
MassMutual Select TRP Retirement	Silver	+	+	●	●	●
MFS Lifetime	Bronze	●	+	+	●	+
Natixis Sustainable Future	Negative	-	-	●	-	●
Principal LifeTime	Neutral	●	●	●	-	●
Schwab Target	Neutral	●	●	+	-	+
State Street Target Retirement	Silver	+	+	●	+	●
T. Rowe Price Retirement	Silver	+	+	+	●	+
TIAA-CREF Lifecycle	Bronze	+	+	+	+	●
TIAA-CREF Lifecycle Index	Bronze	●	+	+	+	●
Transamerica ClearTrack	Negative	-	●	●	-	-
Vanguard Target Retirement	Gold	+	+	+	+	+
Voya Solution	Neutral	●	●	●	-	●
Wells Fargo Target	Neutral	●	●	●	+	●

Source: Morningstar, Inc. Data as of 5/9/19.

Appendix 2 Strategic Equity Glide Path by Target-Date Fund Series

Target-Date Series	Glide-Path Type	Landing Point (Yrs to Target)	Years to Target													
			40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	
1290 Retirement	Through	- 10 YTT	100	95	90	85	80	75	70	60	50	40	20	20	20	
AllianceBernstein Multi-Mgr Select	Through	- 15 YTT	91	91	90	90	83	73	64	55	47	40	35	28	28	
AllianzGI Retirement	Through	- 5 YTT	93	93	93	90	85	75	65	53	40	30	30	30	30	
American Century One Choice	To	0 YTT	85	83	80	74	68	61	55	50	45	45	45	45	45	
American Funds Trgt Date Rtrmt	Through	- 30 YTT	92	92	92	90	88	82	68	57	46	45	40	38	33	
AXA Target Allocation	Through	- 10 YTT	100	95	91	85	81	75	70	60	50	40	20	20	20	
BlackRock LifePath Dynamic	To	0 YTT	99	99	96	89	80	70	59	46	40	40	40	40	40	
BlackRock LifePath Index	To	0 YTT	99	99	96	89	80	70	59	46	40	40	40	40	40	
BlackRock LifePath Smart Beta	To	0 YTT	99	99	98	94	86	76	66	55	40	40	40	40	40	
BMO Target Date Retirement Funds	Through	- 15 YTT	90	90	90	90	88	85	74	64	48	36	36	36	36	
Columbia Adaptive Retirement	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Dimensional Target Date Ret. Income	Through	- 15 YTT	95	95	95	90	78	64	51	38	25	25	25	20	20	
Fidelity Advisor Freedom	Through	- 15 YTT	90	90	90	90	89	78	65	58	53	43	35	24	24	
Fidelity Flex Freedom	Through	- 15 YTT	90	90	90	90	90	80	65	59	52	43	34	24	24	
Fidelity Freedom Blend	Through	- 15 YTT	90	90	90	90	89	78	65	58	53	43	35	24	24	
Fidelity Freedom Index	Through	- 15 YTT	90	90	90	90	90	80	65	59	52	43	34	24	24	
Fidelity Freedom	Through	- 15 YTT	90	90	90	90	89	78	65	58	53	43	35	24	24	
Fidelity Managed Retirement	Through	- 15 YTT	56	56	56	56	56	56	56	51	45	38	30	24	24	
Fidelity Simplicity RMD	Through	- 15 YTT	54	54	54	54	54	54	54	54	46	36	27	19	19	
Franklin LifeSmart	To	0 YTT	85	84	83	82	80	74	70	50	35	35	35	35	35	
Goldman Sachs Target Date Portfolio	To	0 YTT	92	92	92	92	77	65	56	48	38	38	38	38	38	
Great-West Lifetime Conservative	Through	- 15 YTT	84	83	81	75	65	54	45	38	32	28	25	23	23	
Great-West Lifetime	Through	- 20 YTT	93	93	92	90	85	76	65	55	48	42	38	35	34	
Great-West SecureFoundation Lifetime	To	10 YTT	91	91	90	89	87	78	68	58	58	58	58	58	58	
Guidestone Funds MyDestination	Through	- 15 YTT	95	95	93	89	85	78	70	60	54	48	42	37	37	
Harbor Target Retirement	Through	- 5 YTT	93	93	84	74	65	55	44	38	32	20	20	20	20	
Invesco Balanced-Risk Retirement	To	0 YTT	54	54	54	54	54	54	54	45	35	35	35	35	35	
Invesco Peak Retirement	Through	- 5 YTT	94	90	85	80	73	65	52	41	38	38	38	38	38	
John Hancock Multi-Index Lifetime	Through	- 20 YTT	94	94	94	94	91	82	72	61	52	47	38	32	25	
John Hancock Multi-Index Pres.	To	0 YTT	82	82	82	80	75	66	49	31	8	8	8	8	8	
John Hancock Multimanager Lifetime	Through	- 20 YTT	93	93	93	93	90	82	70	61	52	43	39	30	25	
JPMorgan SmartRetirement Blend	To	0 YTT	91	91	91	91	82	73	61	49	33	33	33	33	33	
JPMorgan SmartRetirement	To	0 YTT	91	91	91	91	82	73	61	49	33	33	33	33	33	
KP Retirement Path	Through	- 5 YTT	84	84	82	79	74	67	59	50	41	36	36	36	36	
MainStay Retirement	Through	- 10 YTT	90	89	85	83	78	72	63	54	50	35	30	30	30	
Manning & Napier Target	Through	- 5 YTT	84	84	84	76	70	63	53	47	43	33	33	33	33	
MassMutual RetireSMART by JPM	To	0 YTT	86	86	86	86	79	72	62	53	38	38	38	38	38	
MassMutual Select TRP Retirement	Through	- 30 YTT	90	90	90	90	85	80	70	65	55	45	40	35	30	
MFS Lifetime	To	0 YTT	95	95	95	95	88	81	61	41	29	29	29	29	29	
Nationwide Destination	Through	- 20 YTT	93	91	89	86	80	73	65	57	49	43	38	34	31	
Natixis Sustainable Future	Through	- 10 YTT	93	93	91	87	81	73	62	54	47	38	32	32	32	
PIMCO RealPath Blend	To	0 YTT	88	88	87	84	78	69	60	52	41	41	41	41	41	
PIMCO RealPathTM	To	0 YTT	88	88	87	84	78	69	60	52	41	41	41	41	41	
Principal Lifetime Hybrid	Through	- 15 YTT	93	90	87	85	80	73	67	58	48	40	31	23	23	
Principal LifeTime	Through	- 15 YTT	93	90	87	85	80	73	67	58	48	40	31	23	23	

Source: Morningstar, Inc. Data as of 12/31/18.

Appendix 2 Strategic Equity Glide Path by Target-Date Fund Series (Continued)

Target-Date Series	Glide-Path Type	Landing Point (Yrs to Target)	Years to Target												
			40	35	30	25	20	15	10	5	0	-5	-10	-15	-20
Prudential Day One Target Date	Through	- 10 YTT	97	95	94	92	88	73	60	47	45	40	35	35	35
Putnam RetirementReady	To	0 YTT	94	90	85	79	71	61	53	44	40	40	40	40	40
Schwab Target Index	Through	- 20 YTT	95	92	89	85	79	72	63	52	40	38	35	30	25
Schwab Target	Through	- 20 YTT	95	92	90	86	80	72	64	54	40	38	35	31	25
State Street Target Retirement	Through	- 5 YTT	90	90	90	86	83	77	69	58	46	35	35	35	35
T. Rowe Price Retirement Income	Through	- 30 YTT	90	90	90	90	85	80	70	65	55	45	40	35	30
T. Rowe Price Retirement	Through	- 30 YTT	90	90	90	90	85	80	70	65	55	45	40	35	30
T. Rowe Price Target Retire	Through	- 30 YTT	90	87	83	78	72	65	58	50	43	37	36	34	31
TIAA-CREF Lifecycle Index	Through	- 10 YTT	94	93	93	92	83	75	68	59	52	46	40	40	40
TIAA-CREF Lifecycle	Through	- 10 YTT	99	98	97	96	86	77	68	60	50	45	40	40	40
Transamerica ClearTrack	Through	- 10 YTT	94	94	93	88	78	72	63	56	51	44	33	33	33
USAA Target Retirement Funds	To	0 YTT	88	87	86	82	76	68	57	47	35	35	35	35	35
Vanguard Target Retirement	Through	- 10 YTT	90	90	90	90	81	74	66	59	50	34	30	30	30
Voya Index Solution	To	0 YTT	95	95	95	88	80	72	62	50	35	35	35	35	35
Voya Solution	To	0 YTT	95	95	95	88	80	72	63	50	35	35	35	35	35
Voya Target Retirement	To	0 YTT	95	95	95	88	80	72	62	50	35	35	35	35	35
Wells Fargo Dynamic Target	Through	- 10 YTT	96	96	96	95	91	87	79	72	64	58	51	51	51
Wells Fargo Target	Through	- 10 YTT	90	90	87	82	75	66	56	47	39	34	30	30	30

Source: Morningstar, Inc. Data as of 12/31/18.

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